620

Contractors and Engineers

magazine of modern construction

FEBRUARY 1954

THE JOHN CREERAR
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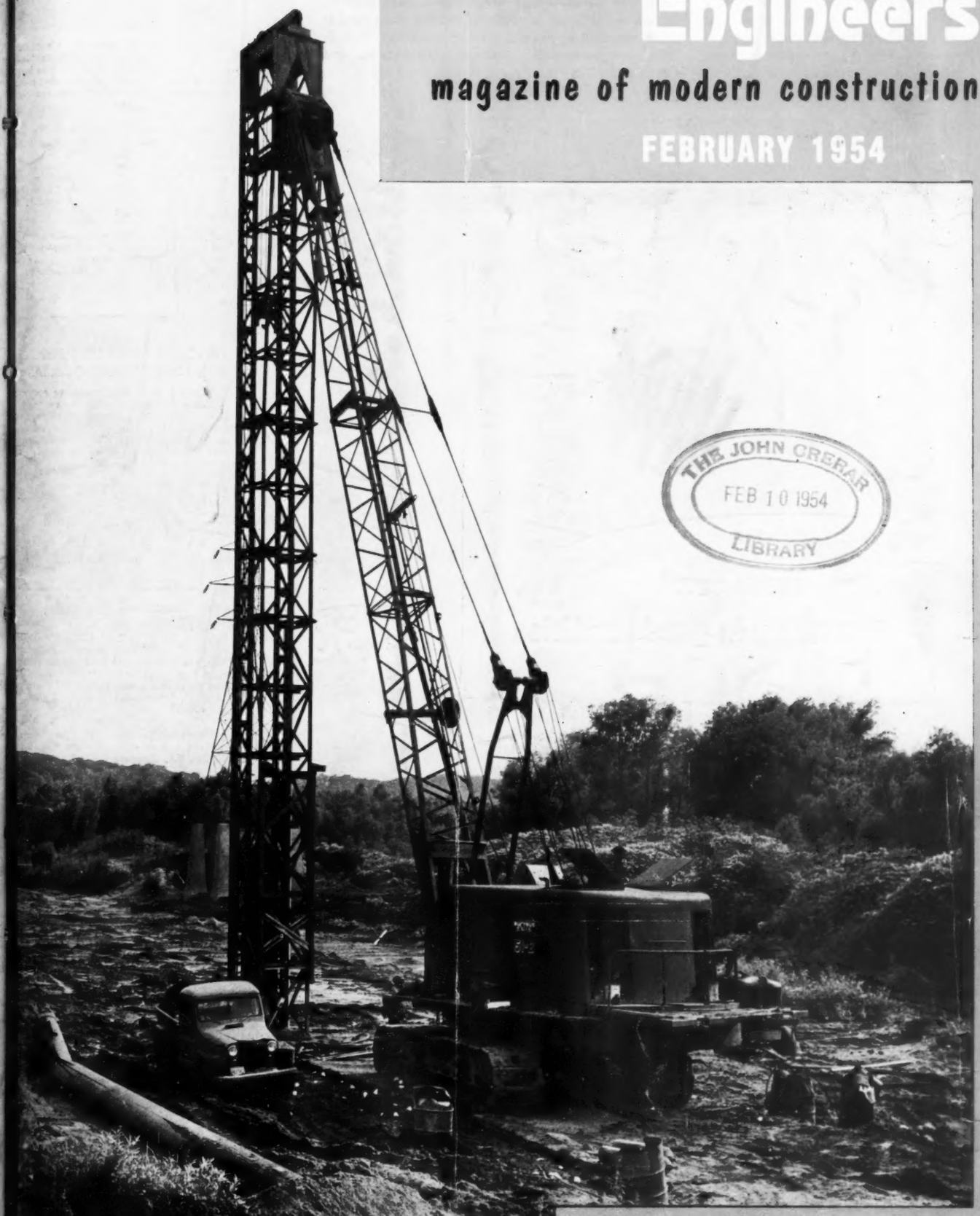


...Sand drains for bridge approach on U. S. 51 near La Salle, Ill., are driven with a McKiernan-Terry hammer and a specially constructed set of leads mounted on a Bucyrus-Erie 51-B crane. Page 28

How Pozzolith Helps Meet Concrete Requirements

Pozzolith is an aid in meeting concrete requirements because of its three-way action.

First, Pozzolith *disperses cement,* putting more of the cement to work by increasing the surface area of the cement particles in contact with water.

Second, Pozzolith *reduces water,* providing lowest unit water content whatever the workability requirements. (Unit water content is the amount of water required per cubic yard of concrete.) For a given workability, Pozzolith decreases the unit water content by approximately 15%.

Third, Pozzolith *entrains air,* producing the optimum amount of air in the mix.

Because of this three-way action, plus the fact that Pozzolith complies with the water-cement ratio law, it is a useful "tool" in obtaining the following results: easy placeability, assured strength, minimum shrinkage, low permeability, increased bond-to-steel and great durability.

Mansfield, Ohio Sewage Treatment Plant. Pozzolith Concrete throughout. View above and view immediately below show condition of concrete today. Consulting Engineer — George B. Sowers

After 17 years of severe service POZZOLITH CONCRETE in good condition

1953

AT the time of a recent inspection of the Mansfield Sewage Treatment Plant, now in service 17 years, the concrete was found to be in good condition.

Pozzolith produces durability like this in sewage treatment plants — one of the most severe exposures to which concrete is subjected — because it disperses cement, reduces water, entrains the optimum amount of air and conforms with the water-cement ratio law.

Pozzolith also provides important construction advantages for this type of concrete work. Among these advantages are easy placeability for thin wall sections, low shrinkage and no segregation.

Investigate the advantages of Pozzolith for your next job . . . it will enable you to obtain the required qualities *at lower cost than by any other means.* "See-for-yourself" Pozzolith demonstration Kit supplied on request . . . without cost or obligation.

1936

Plant at Time of Construction.

the MASTER BUILDERS Co.

CLEVELAND 3, OHIO — Subsidiary of American-Marietta Company — TORONTO, ONTARIO

"IRON-CLAD" CONCRETE FOR HEAVY TRAFFIC AREAS

The Masterplate "iron-clad" concrete floor 4-6 times more wear-resistant than the best plain concrete floor, also corrosion-resistant, spark-safe, easy-to-clean, non-slip, non-dusting and economical. Non-colored and colored.

Experience in all types of plants has proved the value of Masterplate "iron-clad" concrete floors in helping to maintain a smooth flow of production, reduce maintenance expense and improve plant safety.

Only with Masterplate can a Masterplate "iron-armored" concrete floor with all its important service advantages be obtained, because only Masterplate contains the cement-dispersing agent calcium lignosulfonate which makes it possible to easily float a pound or more of tough, ductile metal on fresh concrete and *keep it at the surface.*

Full information on Masterplate—for new floors and resurfacing old concrete floors—and the "see-for-yourself" demonstration kit supplied on request by the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

COLORED CONCRETE FLOORS FOR LIGHT TRAFFIC AREAS

Colorcron is being widely used by contractors to obtain uniformly colored, long wearing concrete floors for show rooms, churches, schools, apartments and offices; also for recreation rooms, patios, driveways, sidewalks, breezeways and garages. Floors can be scored to any desired pattern.

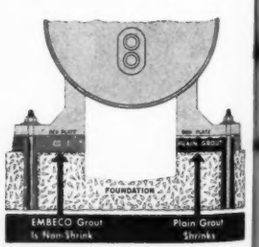
Color Plus Long Wear

Colorcron floors cost less additional than painting the floor, outwear the best plain concrete floor, and have more uniform and more intense color than is obtained from the use of pigments put in the mix. Colors: light grey, dark grey, red, brown, black, green, dark green, and non-colored.

Full directions for the use of Colorcron may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

FOR NON-SHRINK GROUTING

To avoid shrinkage—principal cause of failure in equipment grouts—plant engineers use Embeco metallic aggregate, the material that produces a non-shrink flowable grout.



Cross-section shows how an easily placeable, flowable Embeco Grout counteracts shrinkage to produce full contact with bedplate.

Following are a few of the many other uses of Embeco non-shrink mortar; grouting anchor bolts; grouting steel floor grids; grouting around pipes through walls; caulking bell and spigot pipe; patching floors, ramps and platforms.

A 16-page booklet of useful data and information on the Embeco Non-Shrink Method of Grouting may be obtained from the manufacturer, The Master Builders Co., Cleveland 3, Ohio.

Contractors and Engineers
magazine of modern construction

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EDITORIAL

TEST ROADS MUST FAIL

Test roads, representing a sizable investment for a highway department, are becoming increasingly important factors in highway design. But testing must be carried to failure if results are expected to indicate economical application of the design being tested.

A metallurgist testing a newly developed alloy, for example, selects a test specimen small enough so that it will fail within the limits of the load which can be applied. He does not select a specimen so large that it cannot be broken. Then he carefully analyzes the composition of the specimen and the test results. From the knowledge gained, he can determine a maximum safe working load. This load will utilize the qualities of the material most economically without danger of failure.

Following the same reasoning, roads must be tested to failure before engineers can fix the maximum load which can be carried safely by a particular design. If the tests utilize normal traffic in lieu of test vehicles, designs must be adapted so that failures will occur within the load limits produced by this type of traffic.

In the case of the recently completed Indiana Test Road Sections, it is quite possible that the two designs being tested are both so "overdesigned" that they will not show any signs of failure for many years. These sections consist of two adjoining 5-mile spans of new pavement, one of concrete and the other of bituminous material. Until these sections fail, the only conclusion which engineers can draw is that both designs are strong.

Here is the challenge for designers of highway test sections. Pavements must be designed to fail under anticipated loads and without a "factor of safety" which will prevent failure. These roads must be designed and treated as test specimens if the results obtained are to indicate safe and economical working loads.

As test specimens, the composition of the roads—paving course, base, and subsoil—must be known. Thickness and density of base and surface courses must be accurately measured. The nature of the applied load must be definitely known and include such factors as vehicle weights, traffic volume, speed, and weather conditions. Then, as failures occur, they must be carefully observed and analyzed. In most cases, the test will show that the design was not adequate for the load under which it was tested. Only by failing can the road allow the designer to determine the safe working load for the particular design under study.

The Indiana plan for building and financing test roads—a new approach to the problem—should point the way toward a more widespread and more intensive testing of pavement types and designs. The sections were built as part of the Indiana state highway system under the regular Federal-Aid construction program.

If pioneering highway officials in all parts of the country adopted the Indiana plan, then designed their test specimens to fail rather than last indefinitely, the science of highway engineering would be materially advanced. Equally important, the resulting economic benefits would be felt indefinitely by those who pay for the nation's highways.

News and Views

While economists, government officials, and just plain John Does are busy weighing the country's economic situation for the immediate future, The Associated General Contractors of America has cast a backward glance at 1953 to note its **record volume of construction** and voice the belief that this high rate can be continued through 1954. Altogether, $46.5 billion worth of construction was included in the year 1953, with $34.7 billion of this amount listed as new construction. Last year, which exceeded 1952's volume by 6 per cent, marked the eighth consecutive year that **a new record in dollar volume was established.**

While most segments of the industry helped achieve this record, a few favored categories paced the group. Railroads counted for almost half a billion dollars in construction—the highest amount they have spent since the 1920's. Gas facilities chalked up the second highest volume in their history, with construction amounting to $1.2 billion. **The highest volume** in the public construction category—$3.1 billion—was registered by highways.

The report noted particularly a trend in new public construction for expanding state and local public work, principally on highways, schools, and sewer and water facilities. **This type of construction** now accounts for almost 60 per cent of the total public construction in the nation.

The report also hit an optimistic note, declaring that a potential high rate of construction is possible. Favoring such a development are the current high level of plant and equipment expenditures planned by business, high commercial construction, **a backlog of planned projects,** and new suburban developments needing schools, water systems, and roads.

Already, highway construction in Illinois and California is pointing to a **new peak in road construction.** The Illinois program, calling for more than $84 million, will set a record for that state for the third consecutive year. California's road budget is $205.11 million for construction alone, while Indiana is beginning work on its new turnpike which hurdled the $280 million bond issue just before the close of '53.

The Plaza of Centro Bolivar, in Caracas, Venezuela, is dedicated by President Marcos Jerez Jiminez. Towers in background will house government offices.
Wide World Photo

Highway Researchers Hold Annual Meeting

Charles R. Waters, district engineer of the New York State Department of Public Works, received the Roy W. Crum Award for Distinguished Service.

SEVERAL HUNDRED of the nation's leading highway authorities presented and discussed nearly 140 technical papers and reports at the thirty-third Annual Meeting of the Highway Research Board in Washington, D. C. Scientists and engineers from colleges and universities, industry, highway departments, and the Bureau of Public Roads held 28 separate sessions January 12-15 to pool the latest information on highway economics, finance, administration, design, materials, construction, maintenance, traffic, soils, and night visibility.

Distinguished Service

One of the highlights of the meeting was the presentation of the Roy W. Crum Award for Distinguished Service to Charles R. Waters, Eng. D., district engineer, New York State Department of Public Works, Buffalo, New York.

For more than twenty-five years Dr. Waters has devoted much of his time beyond his regular duties to the fundamentals of highway research, investigations, field trials and experiments to increase the useful life span of pavements and structures, signs and markings, and in the development of traffic engineering, particularly in urban areas. His suggestions for covering rough pavements with bituminous surfacing materials have gained wide acceptance in New York State. Research conducted under his supervision has resulted in notable improvements in signs and in standardization of pavement markings for highways.

Chairman's Report

R. H. Baldock, chairman of the Highway Research Board, opened the meeting by reviewing the accomplishments during 1953 and commenting on the prospects for 1954. He reported that the Board is sponsoring an essay contest for college students in those states where the General Motors Corp. did not award all of the prizes available in its own essay contest. General Motors made the uncommitted prize money available to provide the Highway Research Board's "Better Highways College Essay Contest".

One of the most interesting research projects reported on was the road test sponsored by the Western Association of State Highway Officials at Malad, Idaho. A progress report showed that over 115,000 heavy axle loads had been applied to the road by November 1. More tests will be made this spring, and the final report presented at next year's meeting.

Baldock also reported on the proposed AASHO Road Test project located on U. S. 6 in Illinois.

Materials and construction was covered by engineers who presented papers on bituminous mixes, concrete curing, dynamic testing, and others.

Once again, highway maintenance problems attracted the attention of many engineers. Information was presented on joint sealing, undersealing rigid pavements with asphalt emulsion, and cracking of bituminous resurfacing.

Soils

In the field of soils, Baldock reported that Bulletin No. 58, prepared by the Committee on Soil Compaction, is being received with considerable enthusiasm throughout the country. Further information on this subject was presented in two papers which discussed the effect of compaction methods and also repeated load application on soil compaction efficiency. Investigations made at Georgia Institute of Technology showed that the greatest amount of soil consolidation is produced by the fewest load cycles.

Some of the uncertainties involved in the application of vertical sand drains to saturated clays were covered in a report on the extension of a runway into a marshy area at Norfolk Naval Air Station. The analysis showed that there was no measurable decrease in the moisture content due to consolidation or the use of sand drains. The shearing resistance of the soft silty clay was measurably decreased by the disturbance during the installation of the sand piles and was not recovered. The report concluded that the sand drains were of no benefit on the project. THE END

Hot-Mix Texaco Asphaltic Concrete paving, under construction and completed, on US Route 85 in western South Dakota. The contractor was the Northwestern Engineering Company of Rapid City, S. D.

Laying 18 miles of Asphalt
on a Black Hills highway

South Dakota's 1953 highway program included an 18-mile project on US-85, where this route cuts through the Black Hills near the Wyoming line. A Hot-Mix Asphaltic Concrete wearing surface on a gravel base was specified by the State Highway Department. The Asphaltic Concrete was laid in two courses, with a compacted thickness of 1½ inches. Because of the rocky nature of the country, 4 inches of gravel provided an adequate base.

Hot-Mix Asphaltic Concrete is a heavy-duty pavement, which absorbs and stands up under the hardest kind of wear. No other pavement equalled its performance on test tracks for army tanks during World War II. It is demonstrating its rugged durability today under the concentrated traffic of the New Jersey Turnpike, the Holland Tunnel in New York City and the Delaware River Bridge at Philadelphia. Thousands of miles of heavily traveled trunk highways and city streets are served by this resilient, joint-free, economical type of asphalt paving.

Your own road or street project may call for a heavy-duty pavement of Hot-Mix Asphaltic Concrete. If not, the most economical solution may be supplied by one of the other plant-mixed asphalt types, by asphalt penetration macadam, road-mixed asphalt surfacing, or one of the asphalt surface-treatments. Whichever type you use, Texaco Asphalt Cements, Cutback Asphalts and Slow-Curing Asphaltic Oils include a product exactly suited to your requirements. Texaco asphaltic products are refined from scientifically selected crudes. Road builders from the Atlantic to the Rockies have paved with Texaco for half a century.

Two helpful booklets covering all types of Asphalt road and street construction can be obtained by writing our nearest office.

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TEXACO

TEXACO ASPHALT

Heavy Resurfacing Salvages Highway

The box of the Fruehauf trailer begins rising to dump its load of slag into the Apsco spreader. Two passes were required to lay the 12 inches of foundation course. *C. & E. Photo*

MOST HIGHWAY ENGINEERS now agree it takes more than a 3-inch resurfacing to salvage a deteriorating concrete pavement for any reasonable period of time when deterioration can be traced to subsurface drainage troubles caused by poor subsoil. The New York State Department of Public Works had this fact driven home quite effectively when sections of a 30-foot-wide concrete pavement on U. S. 20, which had been covered with a shallow layer of asphaltic concrete about six years ago, failed to hold up.

The segments were along Southwestern Boulevard, leading out of Buffalo. U. S. 20 is one of the two main routes carrying traffic out of the Buffalo area toward Cleveland, Ohio. Pumping and cracking on the resurfaced concrete became so serious on the three-lane road last spring, the Buffalo district of the Department of Public Works decided a heavy resurfacing on two of the worst stretches was called for. A $600,000 contract was awarded the Brunner Asphalt & Construction Co. of Buffalo for repaving on a total of 5.2 miles.

Widening

In addition to breaking up all the bad sections of the pavement, the contract required widening to 36 feet and resurfacing with 12 inches of foundation course slag, followed by 4 inches of penetration macadam and 2½ inches of bituminous concrete. The slag was laid 48 feet wide to provide 6-foot shoulders on each side.

SUCCESSFUL CONTRACTORS REPORT ON...

MADSEN ASPHALT PLANTS

GLEN L. "DICK" ROWELL

J. C. COMPTON COMPANY

McMINNVILLE, OREGON

HELPING TO BUILD THE HIGHWAYS OF THE WORLD — MADSEN Since 1910

Says..."Our maintenance cost and downtime for the production of 88,981 tons of mix was very low, and we are proud of our new MADSEN Model 481 4000-lb. Asphalt Plant."

The J. C. Compton Company used their MADSEN Asphalt Plant to complete contracts on three highway jobs during the 1953 season. In spite of adverse rainy conditions, highest daily production was 1452 tons or 181 tons per hour of Class "B" Asphaltic Concrete mix.

● WHY NOT FIND OUT HOW THE MADSEN MODEL 481 4000-lb. BATCH CAPACITY ASPHALT PLANT CAN SAVE *YOU* TIME AND MONEY AND STEP-UP *YOUR* PRODUCTION? Write for your copy of Bulletin No. 800 and name of your nearest MADSEN distributor.

Here is the MADSEN Model 481 4000-lb. Batch Capacity Asphalt Plant in full operation. Note that the mixer operator station is located on the end of the plant away from fumes, heat and dust, where operator can see both in-coming and out-going trucks. Plant is furnished with complete safety equipment, larger operating platforms and stairway and caged ladderway structures. The oversize weigh-box unit is roller mounted for quick, easy access to mixer.

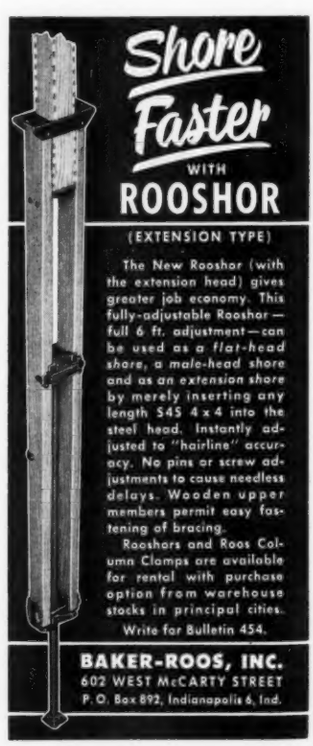
HERE ARE SOME OF THE REASONS WHY THE MADSEN MODEL 481 ASPHALT PLANT GIVES YOU REDUCED COST-PER-TON FOR EVERY TON PRODUCED

- **New MADSEN Model 440 Twin-Shaft Pug Mill Mixer (Patent Pending) with improved mixing action, faster discharge, built-in oversize capacity and precision-ground, externally removable sectional liners.**
- **MADSEN Pressure Injection System (Patent No. 1987243) which pumps the asphalt into the mill in 5 to 7 seconds.**
- **Faster mixing cycle. Bin gates, asphalt pressure injection, and mixer gate are all air operated to speed the mixing cycle and add tonnage at the end of the day.**
- **Unit construction, designed for quick, easy field erection and dismantling.**

Let's Clean-up America's Highways
America's highways are beautiful. Don't make them a dumping ground for cans, bottles and rubbish.
MADSEN ASPHALT PLANTS

MADSEN IRON WORKS, INC.
14100 E. ROSECRANS AVENUE, P. O. BOX 38 LA MIRADA, CALIFORNIA

MADSEN — Equipment that Serves ®



Shore Faster WITH ROOSHOR

(EXTENSION TYPE)

The New Rooshor (with the extension head) gives greater job economy. This fully-adjustable Rooshor—full 6 ft. adjustment—can be used as a *flat-head shore*, a *male-head shore* and as an *extension shore* by merely inserting any length S4S 4 x 4 into the steel head. Instantly adjusted to "hairline" accuracy. No pins or screw adjustments to cause needless delays. Wooden upper members permit easy fastening of bracing.

Rooshors and Roos Column Clamps are available for rental with purchase option from warehouse stocks in principal cities. Write for Bulletin 454.

BAKER-ROOS, INC.
602 WEST McCARTY STREET
P. O. Box 892, Indianapolis 6, Ind.

A 1¼-inch binder course of bituminous concrete is laid by the Adnun paver. This will be followed by a ¾-inch top course. *C. & E. Photo*

Bituminous surface over thick course of foundation slag repairs deteriorated sections of concrete pavement

Brunner moved in on the job near the end of last April and had all the work completed by the end of the summer. One of the major headaches was the heavy traffic. Because of the great volume, two of the three lanes had to be kept open.

A truck-mounted Ingersoll-Rand pavement breaker did the job on the sections which had to be removed. An Apsco spreader, supplied with slag by a fleet of Fruehauf trailers, laid the first 6 inches of foundation course. Two 12-ton Buffalo-Springfield rollers followed behind to achieve the proper compaction. Slag screenings were then spread on top and rolled in. The process was repeated for the top 6 inches of slag.

When the 12 inches of foundation slag had been laid on the outside lane, it was covered with a medium curing asphalt, traffic was shifted over to it, and work commenced on the middle lane. The same procedure was followed when that one was completed and the crews were ready to move to the third lane.

As full-width sections of foundation course were completed, Brunner immediately started spreading the 4-inch course of 2½-inch crushed slag. A fleet of 21 dump trucks hauled the stone about 15 miles. Galion graders leveled the grade, and an Apsco spreader laid the material. The rollers worked behind the spreader.

Spreading the Pavement

The 4-inch bottom course was shot with 1½ gallons of asphalt per square yard, covered with chips, and rolled again. A seal coating of ½ gallon per square yard was then applied, and the course was covered with peastone and given another rolling.

Finally, a 1¼-inch binder course and the ¾-inch top course of bituminous concrete were placed. Erie Paving Co., Inc., Buffalo, the paving subcontractor, hauled hot-mix from a commercial plant in Cheektowaga and laid it with an Adnun Black Top Paver. Three Buffalo-Springfield rollers took care of the final compacting.

In spite of the traffic problems, up to 2,400 tons of stone and 800 tons of binder were laid in an eight-hour day. Major quantities were 61,000 cubic yards of foundation course, 13,000 cubic yards of bottom course, and 14,500 tons of bituminous concrete.

Personnel

J. M. Lang was superintendent for the Brunner Asphalt & Construction Co. C. Wickson was resident engineer for the Buffalo district of the N. Y. State Department of Public Works, which is headed by Dr. Charles R. Waters, district engineer.

THE END

THE USER: A. L. Alley & Son, Faribault, Minnesota.

THE JOB: Relocation of U. S. No. 61 at Red Wing, Minn., where two Cat® DW21 Tractors with No. 21 Scrapers were working with other equipment in wet, sticky conditions on an earthmoving assignment of 300,000 cu. yds. Loading was in wet shale with favorable grade. The going on the ¾-mile haul was good to soft, with 3% adverse grade in the cut. The fill area was soft.

PRODUCTION: Working 9-hour days, the DW21s averaged 900 to 1000 pay yards a day per unit. Loading time with pusher: 1 to 1½ minutes. Running time on the haul: 2¾ minutes. Average cycle time: 8¾ minutes.

Report from the user, Superintendent L. Parker speaking: "With the performance of our DW21s to date, we would say they are the best machines of the rubber-tired class we have ever owned. Those large tires are a big advantage loading the shale, on the haul road and in the soft fill. The rigs are powerful, fast and easy to handle. Their superior performance caused us to buy three additional such machines for another job running south of Red Wing, Minnesota."

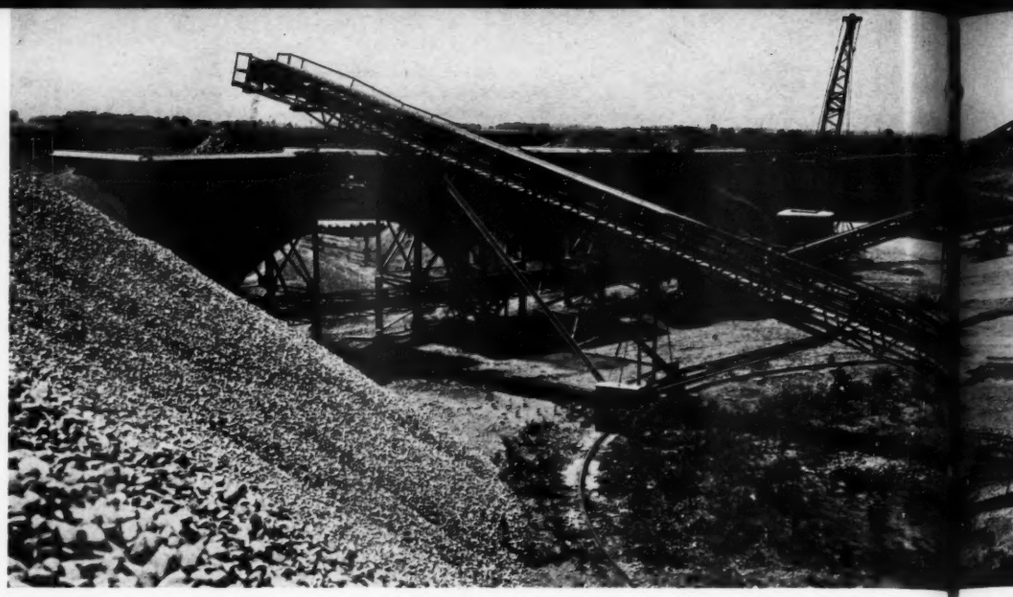
There are the facts. Like Mr. Parker, other users report you can't beat this rugged yellow earthmover for big production on long hauls. There are lots of reasons—here are a few: the DW21 is the only two-wheel earthmover designed and built by one manufacturer. Every part is matched for maximum efficiency. Another exclusive: only the DW21 has the rugged, safe triangular hitch which gives wide bearing space and four-point load distribution.

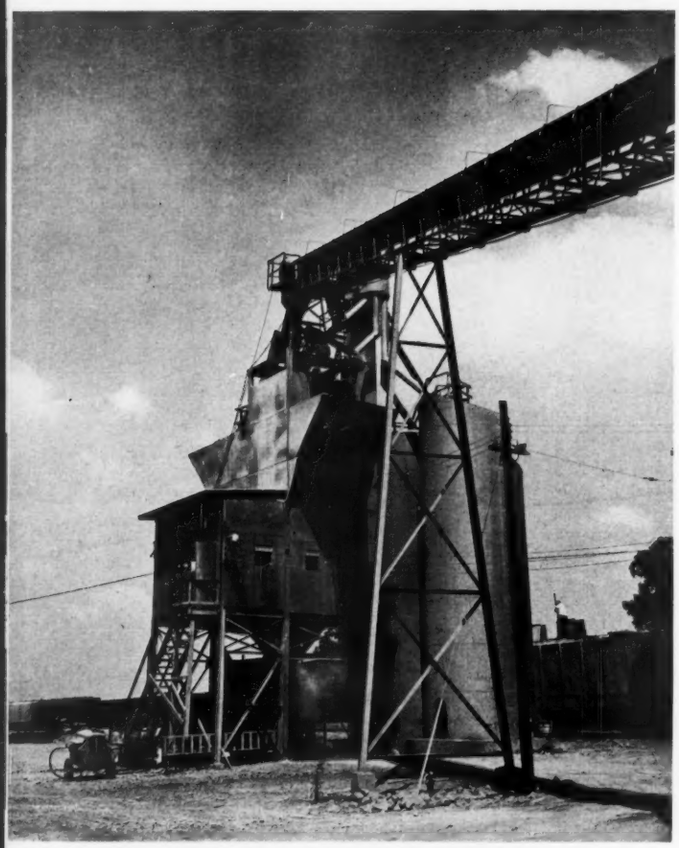
Get the complete picture from your Caterpillar Dealer. He's a source of reliable information and prompt service. Ask him to demonstrate the fast-stepping, big-capacity DW21 on your job!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR®

Sand and stone, dumped from trucks and railroad cars, are conveyed to Johnson storage bins, at left. Riding an arc-shaped rail, the stacker can charge any one of the three bins. When the aggregate drops from the bins to the horizontal conveyor beneath, it moves along to the 200-foot elevating conveyor, background, to the Johnson batch plant. All conveyors are Barber-Greene. *C. & E. Photos*





Closeup showing the end of the conveyor charging the Johnson automatic batch plant.

Automatic Batch Plant Sp

By ALBERT C. SMITH, Field Editor

A NEW OPERATIONAL APRON, requiring nearly 300,000 square yards of concrete pavement, was added to Lockbourne Air Force Base as part of the vigorous expansion program conducted at the field. The job was directed by the U. S. Army Corps of Engineers, Huntington (W. Va.) District, consulting agent for the Air Force on such work.

Built during the last war, the base has undergone numerous major improvements since it was acquired by the Strategic Air Command as an important reconnaissance base in 1951. Practically every improvement made has included some type of "construction first", making Lockbourne one of the most widely known bases in the country. Within the last two years, new design and construction techniques have been used at the base on double-cantilever hangars, lift-slab barracks, a central heating plant utilizing high-temperature hot water, and sawed contraction joints for the airfield pavements.

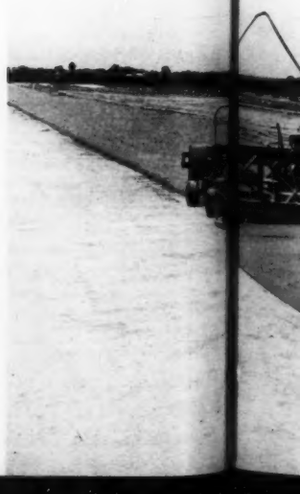
The $2,300,000 apron contract was started October 29, 1952, by Herkner Construction Co. of Cleveland, Ohio. The concrete paving was started last June and finished in four months' time. The job consisted of grading and paving an area, almost rectangular in shape, which measured 3,100 feet long and 950 feet wide. Within this rectangle, several areas around rapid-refueling pits, measuring approximately 300 x 200 feet, were left unpaved and were seeded at a later date.

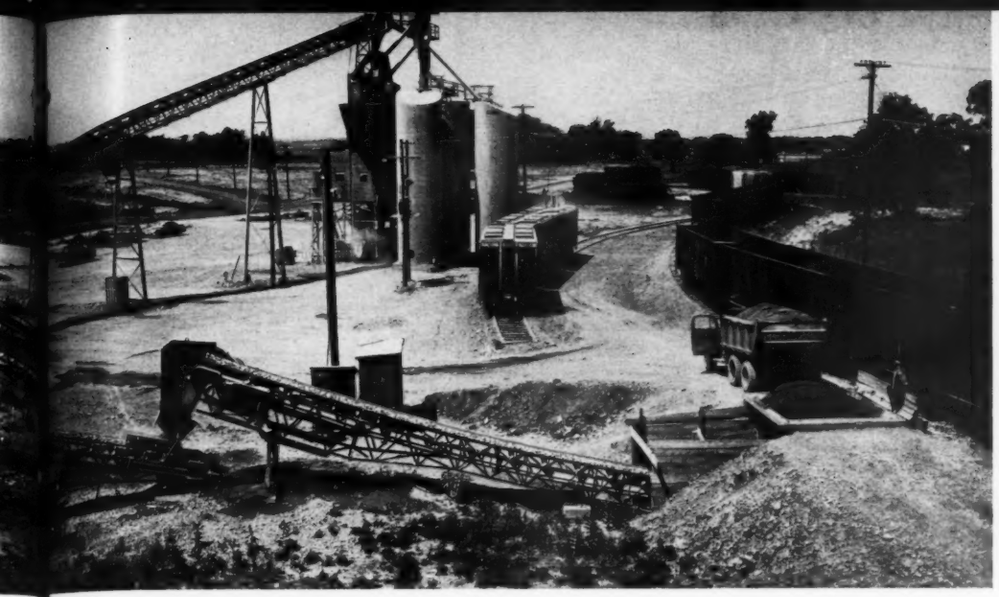
The apron was constructed with two low points running its full length about 275 feet from each edge. Transverse slopes were at 0.5 per cent running toward the low points from each end and from the ridge line at the middle of the apron. Double box culverts, 7 feet wide and 4 feet deep and with concrete gratings, picked up drainage water at the low points.

The 12-inch-thick reinforced-concrete pavement was laid directly on a clay and sand subgrade, compacted

Finishing
spraying
while Pe

Two Multi-Foote pavers follow each other on the paving spread—the first laying 8 inches of concrete, and the second, the last 4 inches of the 12-inch pavement. Blaw-Knox spreaders work behind each paver. After the first paver has passed, reinforcing mats carried by the trailer at left are placed on the bottom 8 inches of concrete.





nt Speeds Airfield Paving

New reinforced-concrete apron is included in Lockbourne Air Force Base expansion program

to a minimum of 95 per cent of maximum density. Wire-mesh reinforcing was placed 4 inches below the surface.

Slabs were laid in 25-foot widths with contraction joints sawed into the hardened concrete every 25 feet. The depth of cut is one-sixth the thickness of the slab, or 2 inches. Longitudinal joints were tied together with 1 x 20-inch-round bars spaced on 15-inch centers at mid-depth of slab. An expansion joint consisting of a ¾-inch premolded material and dowel bars spaced 15 inches on center was used at the ridge line.

Grading

Herkner's first job was to remove about 215,000 cubic yards of material to bring the area down to grade. Only about 80,000 cubic yards were used to form embankments in low areas, and the rest was wasted. All rough grading was done with 11 scrapers, 5 Euclids, and 6 LeTourneau's. Final shaping was done with 2 small scrapers and 2 Galion graders.

Batch Plant

To maintain the high production required on large airfield paving jobs, the contractor knew that he would need a fast and dependable batch plant. The answer was a Johnson fully-automatic. one-stop plant that turned out 130 batches every hour.

The complete plant was located a short haul from the apron construction area on a base siding serviced by the Norfolk & Western Railroad. Bulk cement was brought in by car and unloaded into one of three 825-barrel storage silos. One silo held natural cement and the other two, portland cement. On an adjacent siding, cars hauled in large aggregates and dumped them into a metal hopper below the tracks. Next to the car hopper, another metal hopper received sand and small aggregates from trucks. Because this hopper held both sand and small stone, it was given priority over the other and was emptied more often to provide room for the double load of materials it handled.

Both hoppers fed a 30-inch Barber-Greene unloading conveyor, which in turn fed a 30-inch stacker conveyor. The unloader was 76 feet long and the stacker, 99 feet long. By riding an arc-shaped rail, the stacker could be rotated to feed any one of 3 Johnson storage bins. A cone-type swivel hopper on the end of the unloader provided a free flow of material into the stacker.

The three Johnson storage bins, one for sand, one for 1-inch stone, and one for 2½-inch stone, were connected by a Barber-Greene 30-inch horizontal conveyor which ran underneath them. At a signal from an operator in the top of the batch plant, a workman assigned to the 3 bins opened the proper gate, materail was carried to the end of the horizontal conveyor, transferred to a 200-foot elevating conveyor, hauled to the top of the batch plant, and then dumped into the proper bin. In this way, the aggregate bins on top of the batch plant were stocked continually. A Lorain crane was kept on hand to load the storage bins from stockpiles if the equipment failed.

Automatic Plant

The automatic batch plant consisted of a 5-compartment bin with a chute loading system for the aggregates and a bucket-elevator loading system for the cements. The all-welded bin had two central compartments for the cements, a compartment on one side for small stone, and two compartments on the other for sand and large stone. Under the compartments were steep-slope batchers which were quickly charged and discharged. A central dial-scale control unit, complete with time and date stamp, relays, push buttons, lights, and other equipment, made the electrically operated process fully automatic. Compressed air

(Continued on next page)

Finishing touches are given to the slab surface by a Heltzel belting and spraying machine which vibrates a two-ply cotton fabric belt at the front, while Permite curing compound is applied from the rear.

About seven hours after the pour, a Clipper Consaw cuts a 2-inch-deep joint into the slab. The Clipper machine uses a 12-inch-diameter blade for the job.

(Continued from preceding page)
for opening and closing batcher gates was supplied by a Jaeger 75-cfm portable compressor.

The complete batch-plant setup required an operating crew of about 10 men. There were three to unload stone cars, one to control the gates on the 3 storage bins, one on top of the batch plant to direct the flow of aggregates into the proper bins, one operating the batchers, two unloading cement, one crane operator, and one oiler.

The Mix

Cement was a blend of 80 per cent portland and 20 per cent natural cement. A cement factor of 6.0 bags per cubic yard of concrete was used, and all the mixes were air-entrained with a 4 per cent air content.

Weights for a typical batch of concrete were:

Portland cement	631 lbs.
Natural cement	143 lbs.
Sand	1,222 lbs.
1-in. stone	1,446 lbs.
2½-in. stone	1,767 lbs.

Batches were hauled to the pavers in ten 3-batch trucks.

Paving Procedure

Herkner broke up the 950-foot-wide area into three strips and began by pouring a pilot lane at the center of each strip. The procedure allowed all other pours to butt against the pilot-lane slabs. This reduced the number of forms required and permitted each lane the proper time to cure before another was laid.

About 4,500 feet of Heltzel 12-inch steel forms were required during most of the paving. Form-setting crews tried to keep at least 1,500 feet ahead of the paving spread. All the forms had a steel bracket to support the 1 x 20-inch dowels which went through holes in the forms.

Preparing the Fine-Grade

The first fine-grading operation was to run a Cleveland Formgrader ahead of the from-setting crew. A guide on the tractor-type machine followed a string-line as rotating blades cleared the soil away to the width of a form and at the approximate grade. Then the forms were set by hand and leveled and pinned, using a pneumatic hammer powered by a Jaeger 75-cfm portable compressor.

As the forms were set, a Buckeye fine-grader followed to remove any excess material. A final check was made by a Cleveland Trailgrader pulled by a Huber roller. The surface of the subgrade was then given a final compacting with a Galion 5-ton tandem roller.

Paving was done by two Multi-Foote 34E pavers working in the same direction. The forward one laid the bottom 8 inches of concrete below the mesh reinforcing, while the rear paver placed the top 4 inches of concrete. Both pavers worked outside the form. The rear paver periodically caught up with the forward paver because it had only half as much concrete to lay. When this occurred, the rear paver moved alongside the forward paver, and they worked together on the bottom two-thirds of the slab.

Each paver had its own Blaw-Knox strike-off spreader to eliminate the necessity of having a spreader move back to the beginning of the lane, raise its screed, and then finish the top course. On the rear of each spreader and near the forms, two Jackson vibrators were mounted.

A Heltzel Flex-Plane finisher is carried across a gap in the pavement by a Tournacrane. *C. & E. Photo*

Batches were mixed for one minute. Water was supplied by three 1,000-gallon tank trucks.

Behind the two pavers and spreaders followed two Heltzel Flex-Plane double-screed finishers and a Koehring longitudinal finisher. Final mechanical finishing was done with a Heltzel belting and spraying machine. This unit vibrated a two-ply cotton fabric belt in front as it

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applied Permite curing compound from the back.

Because of the unpaved fuel-pit areas located within the apron, it was often necessary to pick up equipment and jump the unpaved areas. To do this, the contractor used a Tournacrane pulled and powered by a LeTourneau two-wheel rubber-tired tractor. The unit quickly and easily lifted each finishing machine from the slab, hauled it over the unpaved gap, and set it down on the forms of the new strip. Even with these slow-up periods, the contractor was able to lay over 2,000 feet of 25-foot pavement every 12-hour day.

Another piece of equipment that proved useful around the paving spread was a small Ford rubber-tired tractor. This unit pulled a lightweight trailer which carried a stack of reinforcing mesh. Keeping all the mesh close to the pavers in one mobile stack made for a neater job and speeded the placing.

Sawing the Joints

Engineers at Lockbourne have been experimenting with sawed joints for several years. (See C. & E., April, 1953, pg. 12.) Hundreds of thousands of linear feet of transverse contraction joints have been sawed with very satisfactory results.

Most of the weakened-plane joints on the apron contract were cut 2 inches deep with a unform width of about ⅛ to 3/16 inch. About 3 minutes were required to saw a 25-foot slab. Herkner used a Clipper gasoline-powered machine with a 12-inch-diameter blade. Water was supplied by a tank truck.

After considerable investigation, the engineers determined that joints should be sawed in progressive 25-foot intervals as the concrete attained the proper hardness. When the concrete reached the sawing stage, usually 6 to 8 hours after placing, a chalk line was struck across the pavement. Then the machine proceeded along the line to complete the cut in a single operation. Factors controlling the time element between placing and sawing were weather, temperature, quantity of cement per cubic yard, and type of concrete.

R. Rice was superintendent for Herkner Construction Co. For the Corps of Engineers, Karl C. Vogel was project engineer. Col. G. T. Derby is district engineer for the Huntington District, U. S. Army Corps of Engineers, and Brig. Gen. Pascal N. Strong is division engineer for the Ohio River Division. THE END

First Japanese-Made Koehring Excavator

The first Koehring 205 excavator shovel manufactured in Japan recently came off the assembly line at the Yokohama plant of Ishikawajima-Koehring, Ltd. The rig is a modified version of the ½-yard excavator (15-ton crane lift capacity) manufactured by the Koehring Southern Co., Chattanooga, Tenn.

The Japanese firm was founded in the summer of 1952 and is a partnership between Koehring and Ishikawajima Heavy Industries. I-K equipment has been used extensively in the Japanese postwar dam construction program, notably at Ogochi Dam near Tokyo, destined to be the major source of that city's water supply. In the hydroelectric field, I-K has furnished C. S. Johnson-type automatic concrete plants. Johnson, located at Champaign, Ill., is a Koehring subsidiary.

Emphasis in the future will be on equipment manufactured entirely in Japan from plans furnished by Koehring and its subsidiaries. Equipment will be modified somewhat by Koehring and I-K engineers to meet Japanese specifications. Eventually, the Yokohoma firm's manufacturing facilities will be self-sufficient. At present, I-K has filled $1,000,000 worth of orders and is working on a backlog of nearly $750,000 more.

Pennsylvania Road Costs Set New High

Expenditures for highway construction, reconstruction, and resurfacing in Pennsylvania during 1953 produced an all-time record volume of approximately $132,609,000, according to C. H. Buckius, chief engigeer of the Pennsylvania Department of Highways. Figures compiled for the first 11 months showed a total of $123,609,000, while costs for December, not yet tabulated, are estimated at $9,000,000. Expenditures in 1953 exceeded 1952 by $1,562,000. Barring war or depression, costs for 1954 are estimated conservatively at $135,000,000.

In the year just ended, construction contracts amounting to a total of $94,000,000 were awarded for 608 miles of highways. Because of much-needed construction (34 per cent of the state's system of highways is over 20 years old), department officials hope to increase the total by $1,000,000 this year.

Total maintenance costs on the 41,100-mile highway system for 1953 should not exceed the $31,534,000 expended for similar purposes in 1952. This has been accomplished despite a general ten per cent increase in wages of maintenance employees and an increase in materails costs. Total resurfacing costs for 1953 amounted to $3,347,400, as compared to $3,675,400 in 1952. The 1953 unit cost per gallon of bituminous material was $0.359, while the cost in 1952 was $0.390.

This $288,982 saving is a reflection of the department's return, in 1953, to its original policy of purchasing bituminous materials directly from the producers and applying such materials with its own equipment under the supervision of its own personnel.

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ARBA Urges Increased Highway Federal Aid

Road builders express concern over deficiencies in highway system during annual convention in Atlantic City, N. J.

THE PERENNIAL AXIOM that the nation's highway deficiencies are extremely serious was once again the theme of the annual convention of the American Road Builders' Association held in Atlantic City, N. J., January 5-7. The ARBA is a national organization engaged in the promotion of roads and airports. Its re-elected president, Robert M. Reindollar, a Baltimore, Md., consulting engineer, summed up the viewpoints expressed at the meeting of industrialists, engineers, educators, contractors, and public officials when he stated that a bold, realistic national program of action to improve the country's highways is practically imperative.

"Why temporize any longer with highway needs?" asked Reindollar, a former chairman of the Maryland State Roads Commission. "It is urgent that the Federal government, in cooperation with the states, counties, and communities, continue to expand its federal-aid program because it is in the general welfare."

Highway finance was the keynote of speeches addressed to the convention by three members of the U. S. House of Representatives. Rep. George A. Dondero of Michigan, chairman of the House Committee on Public Works, stated it was his belief that "the American people would applaud the suggestion that we reduce foreign aid a billion dollars and spend it on the highways of the United States". This same viewpoint was expressed by Rep. J. Harry McGregor of Ohio, chairman of the House Subcommittee on Roads, when he urged, "Let's stop sending our excise tax money to foreign countries and use it to build roads and for other worthy purposes here at home." Rep. George H. Fallon of Maryland, member of the House Committee on Public Works, declared that "the big issue is how we are going to pay for the highways we need. . . . It would be a very poor government, on any level, that would pinch pennies for streets and roads, and particularly urban transportation, and thus paralyze the most effective gear in our economic machine."

Too Many Cars?

Congressman Dondero reminded the convention that there are now more than 53,000,000 motor vehicles operating on our streets and highways. Nearly 6,000,000 new cars are added to this total each year while time and travel remove only 3,000,000 old cars from the roads annually. He also called attention to the fact that the Federal

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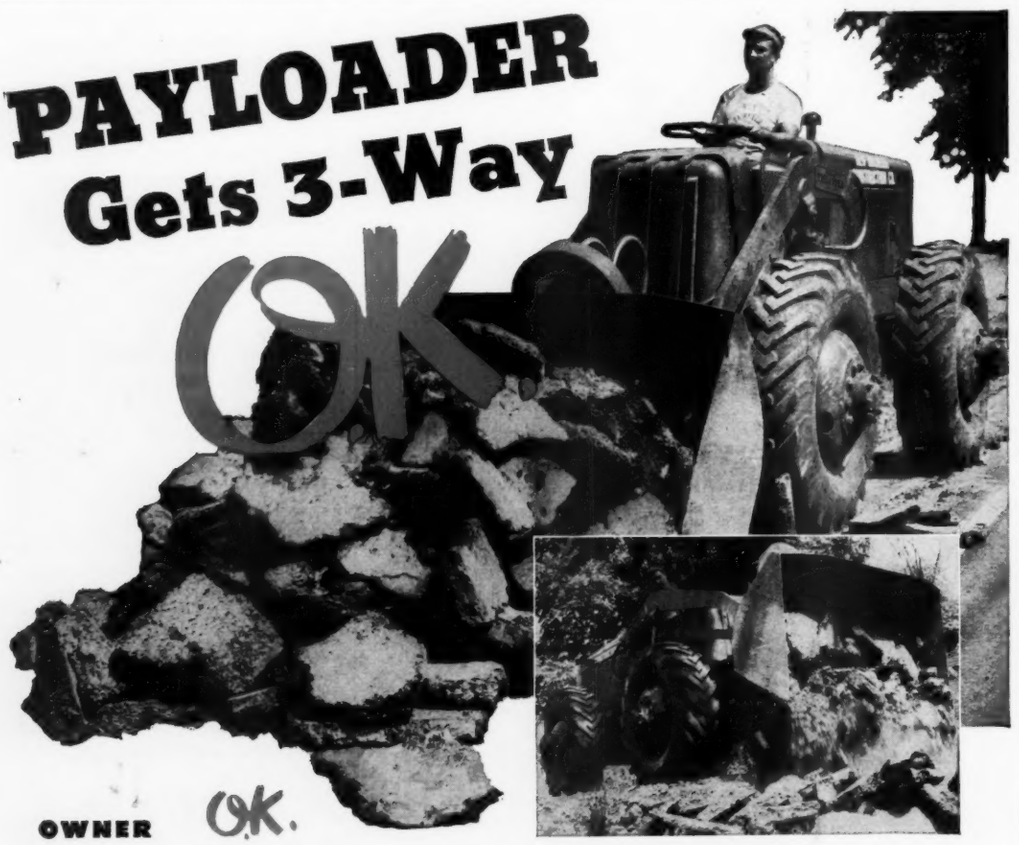

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SUPERINTENDENT O.K.

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government is now collecting from highway users in taxes—mostly on gas and oil—about two billion dollars annually and returning to the states slightly more than 25 per cent of such amount.

The Michigan representative said that he did not favor the proposal that the government repeal the federal tax of two cents a gallon on gas. "To repeal the federal tax on gas, which now exceeds $900,000,000 annually," according to Rep. Dondero, "would not mean more money for roads, but less. We could not expect the 48 states to add the two cents a gallon to their taxes in order to obtain more funds for building roads. Some states might do so while others would reject the idea. A substantial increase in the amount of federal funds, apportioned among the states, would at least be a partial solution to the problem."

Congressman McGregor also voiced his opposition to repeal of the federal gasoline tax, and suggested that the move for repeal "originated from the fact that less than 50 per cent of the federal gasoline tax is being used for highway purposes, to say nothing about the other excise taxes paid by the traveling public. In other words, the motorist wants more of the federal gasoline tax money spent on the highways of these United States, and I am with him 100 per cent in the desire."

Public Roads

Francis V. duPont, Commissioner of the U. S. Bureau of Public Roads, speaking on "What's Going On in Public Roads", stated that while Public Roads is authorized by law to extend federal aid to toll bridges under the federal-aid system, it is not authorized to extend aid to toll roads. Existing statutes would have to be amended, according to the commissioner, to permit the granting of aid to toll roads.

"However, it is our conviction," said duPont, "that the sponsoring, construction, and operation of toll roads should be delegated to existing state highway departments in preference to the creation of separate authorities. This will assure maximum coordination of toll facilities and the operation thereof with the free highways."

The new commissioner, who assumed office last April, reported that during the past administration overhead was increasing by about $400,000 per annum. "This trend has not only been reversed," duPont declared, "but our expense of operation will be $400,000 less for the 12 months commencing July 1, 1953, as compared to the previous 12 months."

Economies were effected, the commissioner explained, by retiring department employees past the age of 70 who, by special extension of the retirement age, were continuing to serve. This former policy adversely affected the promotion of younger men. Overhead was also reduced by eliminating needless reports that were not used by anyone.

More details on the policy of the present administration for reducing administrative expenditures were given by A. C. Clark, Deputy Commissioner, Bureau of Public Roads. The western headquarters of the bureau has been abolished, and other offices throughout the country have been consolidated. Final changes in organizational set-up and functions will be accomplished in the near future, Clark declared, and every effort will be made toward efficiency and economy.

One of the best-attended sessions of the meeting was a symposium on road equipment sponsored by the Contractors and Manufacturers Division, ARBA. A four-man panel discussed the subject. Representing the U. S. Bureau of Public Roads was H. A. Radzikowski, chief of its Maintenance Branch. M. B. Garber of the Thew Shovel Co. spoke for the manufacturers of construction machinery. Highway and airport contractors were represented by Charles W. Smith, president, Smith Engineering & Construction Co., Pensacola, Fla. Col. C. T. Newton, Chief, Research and Development Division of the U. S. Army Corps of Engineers, discussed equipment for military construction of roads and airfields.

H. A. Radzikowski explained how the unit costs of highway maintenance operations had decreased with the use of mechanized equipment. M. B. Garber, the manufacturers' spokesman, pointed out that there is still a huge backlog of construction in this country, enough to keep equipment makers producing at a rate of at least 70 per cent of peak construction. He suggested that long-range construction programs be established and on a more definite basis than in the past.

Col. Newton stated that for military construction the use of multi-purpose items and the elimination, insofar as feasible, of single-purpose items is essential. A unit of equipment must be rugged, simple to operate and maintain, but extended life expectancy is not necessarily essential. The excessive number of makes and models for each

(Continued on next page)

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(Continued from preceding page)

type of equipment presents problems in maintenance and parts supply. Estimates indicate that about 70 per cent of Army equipment down time is attributable to inexperienced operators and lack of spare parts.

Air-base design now calls for longer and wider airstrips and more solid base construction, the Colonel declared. An air-base for today's aircraft will take seven times as much material as the airstrip of World War II. Consequently construction equipment must be bigger; have increased speed, mobility, and ruggedness; and, embody simplicity of operation and maintenance, together with an increased performance. Specifically, the 18-yard scraper will be preferred to the 10-yard scraper; the 300-hp wheeled tractor to the 175-hp unit; and the 30 to 50-ton pneumatic roller preferred to the 5 to 10-ton compacting machine.

Contractor Charles W. Smith told the group that for each dollar paid to a contractor on a construction contract, the contractor had 67 cents invested in equipment for the job. In other words, it takes approximately $67,000 worth of machinery to equip each $100,000 project. This means that 6,000 contracting firms, bidders on highway and airport construction and maintenance programs in this country, have approximately two billion dollars invested in equipment. Since it is estimated that the contractor replaces about 18 per cent of his equipment annually, these firms buy close to 400 million dollars worth of new construction equipment each year. Because of the present rapid development of equipment, obsolescence may come fast. Consequently the contractor must use good judgment in selecting the equipment for his permanent outfit.

The Pensacola contractor declared that the financial arrangement for the purchase of equipment for a project should be based on a reasonable down payment and a sensible plan of deferred payments. He pointed out that recent months have seen a new economic atmosphere which has created a buyers' market in the equipment field. In this type of market, the manufacturer has a greater urge to develop and promote better equipment.

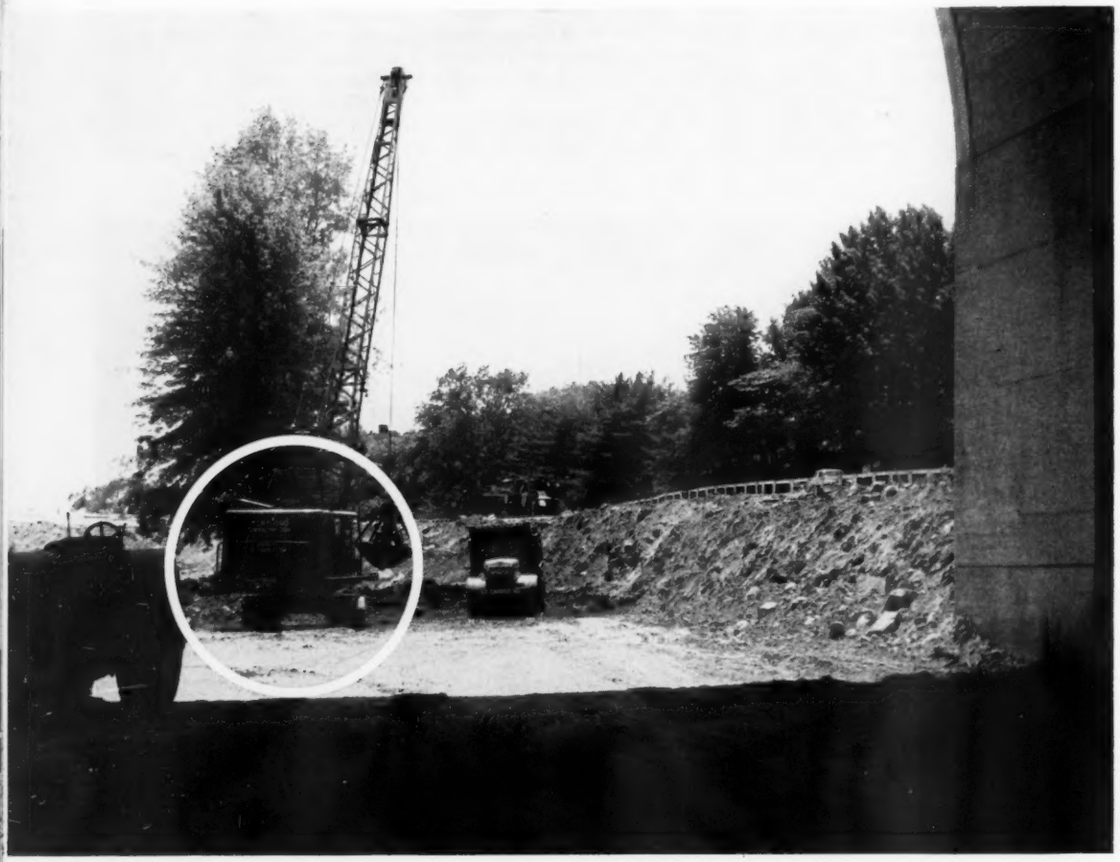
Smith suggested that manufacturers give careful attention in preparing the guide data for repair parts booklets, and to include sufficient drawings and descriptive matter. Referring to engineers who design and write specifications for road and airport construction, he urged them not to specify methods and procedures of construction, but to specify, instead, the results that are to be obtained. In this way contractors and manufacturers would be encouraged to develop new equipment that would do the work more quickly and at lower costs.

Of 558 delegates registered, the largest segment, totaling 186, represented manufacturers of construction equipment, materials producers, insurance and bonding houses, and other suppliers of services to the road and airport construction industry. Public officials, totaling 152, included federal, state, county, and city engineers and administrators. National and regional industry associations were represented by 58 employees. Contractors totaled 70; consulting engineers, 25; press representatives, 25; educators, 24; equipment dealers, 11; and miscellaneous, 7.

The Manufacturers Division, ARBA, voted to hold a road show of construction equipment in January, 1957, at Chicago. The last previous display of road-building machines was held in July, 1948, also in Chicago.

This division, popularly known as CIMA — Construction Industry Manufacturers Association—elected the following officers for 1954: president—Frederick Salditt, Harnischfeger Corp.; 1st vice president—Gail E. Spain, Caterpillar Tractor Co.; 2nd vice president—Kenneth Lindsay, Iowa Mfg. Co.; secretary-treasurer—I. W. Lloyd, The Ohio Oil Co.; executive vice president—Harold F. Hess.

Seven new directors to serve a 3-year term expiring in 1957 were elected. They are B. F. Devine, Chain Belt Co.; Kenneth Lindsay, Iowa Mfg. Co.; W. A. Nugent, Thor Power Tool Co.; Frederick Salditt, Harnischfeger Corp.; Gail E. Spain, Caterpillar Tractor Co.; Julien R. Steelman, Koehring Co.; and F. J. Whelan, Worthington Corp. THE END



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The first time was in June, 1952, when this picture was taken of the rig working on the Bronx River Parkway.

The second time we asked him was more than a year later — September, 1953.

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Convention Calendar

February 1-5 American Society for Testing Materials
Spring Meeting, American Society for Testing Materials, Shoreham Hotel, Washington, D. C. G. A. Wilson, ASTM, 1916 Race St., Philadelphia, Pa.

February 15-19 American Society of Civil Engineers
Meeting, American Society of Civil Engineers, Atlanta-Biltmore Hotel, Atlanta, Ga. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York 18, N. Y.

February 15-19 National Ready Mixed Concrete Assn. and National Sand and Gravel Assn.
Twenty-fourth Annual Convention of NRMCA and the Thirty-eighth Annual Convention of National Sand and Gravel Association, Conrad Hilton Hotel, Chicago, Ill. Vincent P. Ahern, executive secretary, 1325 E St., N. W., Washington, D. C.

February 19-20 National Society of Professional Engineers
Spring Meeting, National Society of Professional Engineers, Hilton Hotel, Albuquerque, N. Mex. Kenneth E. Trombley, NSPE. 1121 15th St., N.W., Washington 5, D. C.

February 22-25 American Concrete Institute
Fiftieth Annual Convention, American Concrete Institute, Shirley-Savoy Hotel, Denver, Colo. William A. Maples, secretary-treasurer, 18263 W. McNicholas Road, Detroit 19, Mich.

February 23-25 Utah Highway Engineering Conference
Fifteenth Annual Utah Highway Engineering Conference, University of Utah Union Building, Salt Lake City, Utah. A. Diefendorf, conference director, Civil Engineering Bldg., University of Utah, Salt Lake City, Utah.

February 25-27 American Concrete Pipe Association
Forty-sixth Annual Convention and Meeting, American Concrete Pipe Association, Fairmont Hotel, San Francisco, Calif. Howard F. Peckworth, managing director, 228 N. LaSalle St., Chicago, Ill.

March 1-4 AGC Convention
Thirty-fifth Annual Convention, Associated General Contractors, Statler and Biltmore Hotels, Los Angeles, Calif. Mr. C. I. Mehl, administrative assistant, AGC, 1227 Munsey Bldg., Washington, D. C.

March 3-5 New York State Assn. of State Highway Engineers
Annual Convention, New York State Association of State Highway Engineers, Headquarter-Arlington Hotel, Binghamton, N. Y. Joseph Scott, chairman of reservations, P. O. Box 1001, Binghamton, N. Y.

March 10-12 Association of Highway Officials of North Atlantic States
Meeting, Association of Highway Officials of North Atlantic States, Shoreham Hotel, Washington, D. C. A. Lee Grover, secretary-treasurer, 1035 Parkway Ave., Trenton, N. J.

March 15-19 National Assn. of Corrosion Engineers
Meeting, National Association of Corrosion Engineers, Kansas City Municipal Auditorium, Kansas City, Mo. A. B. Campbell, executive-secretary, 1061 M & M Bldg., Houston 2, Texas.

April 5-7 American Society of Lubrication Engineers
Annual Meeting and Exhibit, American Society of Lubrication Engineers, Netherland Plaza Hotel, Cincinnati, Ohio. William P. Youngclaus, Jr., administrative secretary, 84 E. Randolph St., Chicago 1, Ill.

April 5-9 Greater New York Safety Council's Convention and Exposition
Twenty-fourth Annual New York Safety Convention and Exposition, Hotel Statler, New York, N. Y. Paul F. Stricker, executive vice president, Greater New York Safety Council, 60 E. 42nd St., New York, N. Y.

April 6-8 Ohio Highway Engineering Conference
Ohio Highway Engineering Conference, Museum, Ohio State University, Columbus, Ohio. Emmet H. Karrer, professor of highway engineering, Brown Hall, Ohio State University, Columbus 10, Ohio.

April 7-9 South Dakota Highway Short Course
South Dakota Highway Short Course, Union Building, South Dakota State College, Brookings, S. Dak. Emory E. Johnson, professor of civil engineering, South Dakota State College, Brookings, S. Dak.

April 13-14 Earth-Moving Industry Conference
Conference, Earth-Moving Industry, Pere Marquette Hotel, Peoria, Ill. J. W. Carter, Research Department, Caterpillar Tractor Co., Peoria, Ill.

April 19-22 Purdue Road School
Purdue Road School, Memorial Union Building, Purdue University, West Lafayette, Ind. Ben H. Petty, professor of highway engineering, Civil Engineering Bldg., Purdue University, Lafayette, Ind.

April 26-28 American Wood Preservers
Annual Meeting, American Wood Preservers Association, Hotel Chalfonte-Haddon Hall, Atlantic City, N. J. For information, write to W. A. Penrose, secretary-treasurer, AWPA, 839 17th St., N. W., Washington, D. C., and for reservations, contact C. C. Calvin, chairman, Hotel Committee, AWPA Arrangements Committee, 887 Suburban Station Bldg., Philadelphia, Pa.

Booklet on Shovel-Crane

■ The 2-yard Lorain Model 820-K shovel-crane is illustrated in a new catalog from the Thew Shovel Co., 28th St. and Fulton Road, Lorain, Ohio. The booklet contains detailed views of the operating mechanism of the crawler, turntable, and front-end equipment. It explains the working of the air controls and the operation of the hydraulic coupling, both of which are standard equipment on this model.

The excavating machine is convertible to shovel, clamshell, hoe, dragline, and crane. One section of the booklet is devoted to the long-range stripping shovel boom and another, to the crane boom and its accessory equipment. These accessories include a steel erector's boom hoist, a third-drum attachment, a vertical gantry, a high-speed boom hoist, a boom-lowering device, a power load-lowering attachment, and boom-tip extension.

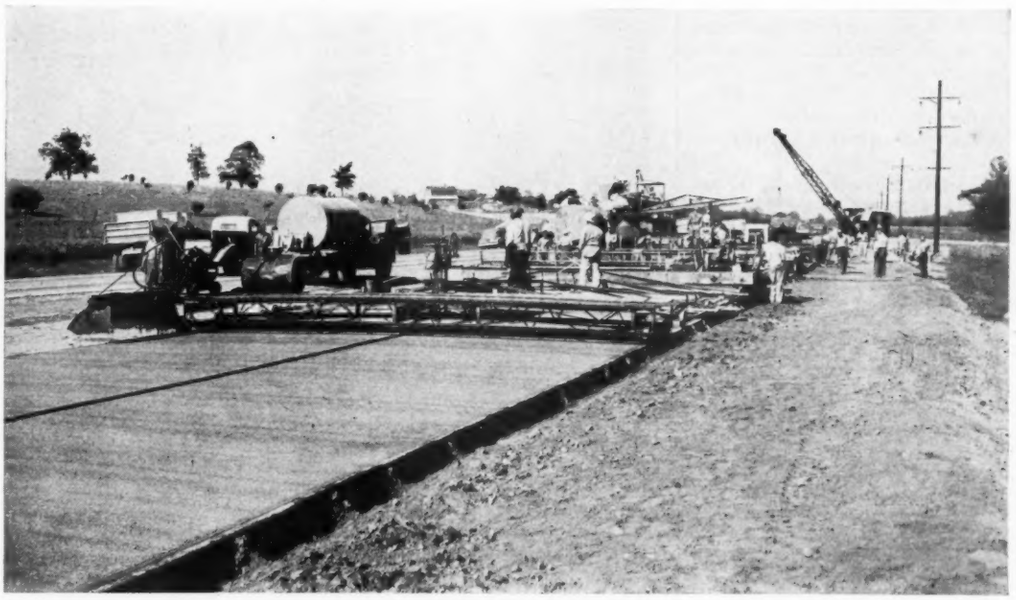
To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 689.

Trailmobile Promotions

Formerly executive engineer, William R. Hummel has been promoted to chief engineer by Trailmobile, Inc., Cincinnati 9, Ohio, manufacturer of commercial truck trailers. Mr. Hummell has also served as head of the experimental and development department.

Other changes in the Cincinnati plant include George Schmidlin, promoted to senior credit manager; and Adrian Siereveld, promoted to personnel manager.

Q. Why is there less bleeding here?



A. Because the concrete's made with Duraplastic*!

A look at this picture shows one reason why so many paving contractors use Atlas Duraplastic air-entraining portland cement. Finishers can work close behind the paver because Duraplastic minimizes bleeding.

Another advantage—and an important one in the long run—is that Duraplastic cement acts to protect finished concrete from the destructive effects of freezing-thawing weather, and de-icing salts.

Contractors find that Duraplastic cement requires less mixing water for a given slump...makes a more plastic, less segregated, mix that dumps, spreads and finishes easily.

YET DURAPLASTIC COSTS NO MORE

It sells at the same price as regular cement. Complies with ASTM and Federal Specifications. For more information, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

**"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

ATLAS® **DURAPLASTIC**
AIR-ENTRAINING PORTLAND CEMENT

C&E-D-154

Makes Better Concrete at No Extra Cost

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station.

Names in the News

Raymond Harsch, new chairman of the executive committee of The Asphalt Institute.

Asphalt Institute Elects Harsch, Re-Elects Gray

At its annual meeting, the board of directors of The Asphalt Institute, 801 Second Ave., New York 17, N. Y., representing the major part of the petroleum asphalt production industry of the U. S. and Canada, elected Raymond Harsch chairman of the executive committee for the coming year. Bernard E. Gray was re-elected president.

Mr. Harsch is manager of the asphalt department of the Shell Oil Co., San Francisco, Calif.

Vice presidents elected for the five U. S. geographical divisions of the institute were: George R. Christie, Atlantic coast; Lysle Walker, Ohio-Great Lakes; Chester Eberle, mid-west; James J. Kelly, southwest; and W. F. Lyte, Pacific coast.

Also re-elected were Herbert Spencer, secretary of the institute; Mr. Christie, treasurer; and John N. Smith, assistant treasurer.

Highway Engineer Retires

After more than 36 years of service with the Maryland State Roads Commission, William F. Childs, Jr., has asked to be relieved of his duties as chief engineer. Succeeding Mr. Childs is Norman N. Pritchett, formerly locations engineer for the commission.

Mr. Childs has agreed to remain with the commission in the capacity of advisory engineer in order to assist in carrying out Maryland's 12-year roads program, which he helped conceive and plan. The program started last month.

Mr. Pritchett has been with the commission since 1928.

Two Get Legion of Honor

Two officials of the International Road Federation, 550 Washington Bldg., Washington 5, D. C., have been decorated with the French Legion of Honor in recognition of their contributions, as chairmen of the federation, to highway development in France. The honor was conferred on Burton C. Budd, vice president of the Packard Motor Car Co., and on Frank T. Magennis, vice president of the Goodyear Tire & Rubber Co.

Cowden Succeeds Matthews

Gov. Johnston Murray of Oklahoma has named Fred Cowden to the state's turnpike authority, succeeding R. P. Matthews, Sapulpa, Okla., newspaper publisher. The change resulted from Matthew's opposition to the use of toll roads, a highly controversial subject in Oklahoma.

Austin Elects Anderson

Election of Harold A. Anderson as vice president and assistant general manager has been announced by The Austin Co., Cleveland, Ohio, engineers and builders. Allan S. Austin has been elected vice president and general sales manager; W. G. Paton has succeeded Mr. Austin as secretary; and John N. Beckley has been named acting eastern district manager.

Mr. Anderson, who joined the Austin organization as a field engineer in 1928, has been vice president and eastern district manager.

Maj. Gen. Bragdon Joins Vermilya-Brown Co.

Maj. Gen. J. Stewart Bragdon, USA, Ret., has joined Vermilya-Brown Co., Inc., a 99-year-old New York City building firm, as a vice president.

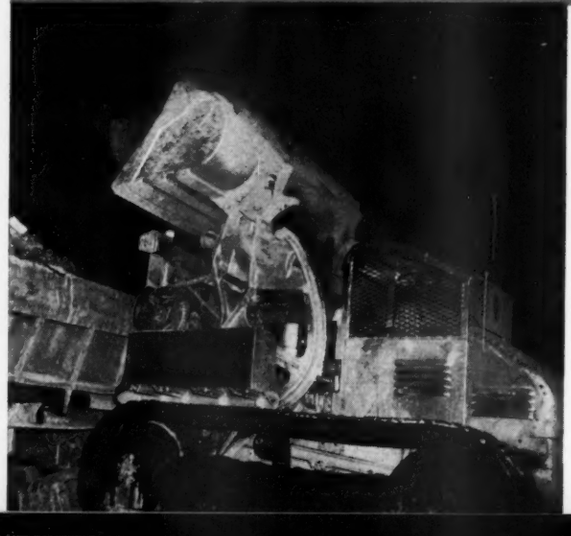
During his Army career, Gen. Bragdon was responsible for the design and construction of the 1947 postwar hospital program of the Veterans Administration.

Since returning to civilian life, Gen. Bragdon has been with consulting engineers in New York City and Washington, D. C.

Hot slag, brick and debris tumbled down in this steel mill open hearth slag pocket to clear the way for furnace relining above. This mass of molten white hot metals and slag along with brick and refractories must be cleaned up quickly — the furnace is out of production until this job is complete.

This is considered one of the toughest kind of loading jobs —it incorporates digging, excavating, prying and loading under intense heat conditions. Previously several types of equipment were used — each for a special function. Now the 105, shown above, is able to replace two or more of these pieces of equipment, speed up the job and get the pocket cleared in record time.

The Eimco 105 picks up the white hot material, ranging in size to 5 or 7 tons, and dumps it overhead into a railroad gondola. (See below.)



Nine yards a minute is fast loading, and you can do it with the Eimco 105. You can dig and load most ordinary materials without preliminary breakage.

The Eimco 105 is primarily an excavating machine with ability to load consolidated material. It will handle many jobs previously assigned to heavy cumbersome machinery costing several times the price of the 105.

Steel castings and steel construction throughout make the 105 rugged and dependable. It is truly the first crawler unit designed to work under the added thrust and weight loads applied by the numerous attachments now available for contractors and industry that are accepted as part of the prime movers they buy. Its all steel construction makes it resist breakage from impact or abrasion which all machines encounter in normal working.

Maginn is AGC President In Northern California

H. C. Maginn, executive vice president of the Calaveras Cement Co., Calaveras, Calif., has been elected president of the northern California chapter of Associated General Contractors of America, Inc., the oldest of AGC's 124 constituent groups and the largest in the heavy-construction field.

E. L. Clements, owner of Clements & Co., Hayward, Calif., was elected vice president, and Gordon Pollock, vice president of the George Pollock Co., Sacramento, Calif., was elected treasurer.

Mr. Maginn moves up from vice president of the chapter and succeeds Dallas Young of San Francisco. Mr. Pollock succeeds Ben C. Gerwick, also of San Francisco.

Walter Kidde Appoints

Gerard T. Shannon has been appointed managing engineer for the industrial engineering department of Walter Kidde Constructors, Inc., New York City. He was previously assistant director of the engineering and construction division of the U. S. Atomic Energy Commission at its New York operations office.

A. V. Williamson Retires

After 39 years of service with the Federal government, A. V. Williamson has retired from the Bureau of Public Roads. He entered government service as a member of the U. S. Forest Service in 1915. He recently returned from his last post, division engineer at Ankara, Turkey, in charge of the highway aid program financed in part by the U. S. through the Economic Cooperation Administration and the Mutual Security Agency.

Howard F. Barrows, new honorary member of SCSA.

Howard F. Barrows Named Honorary Member of SCSA

Howard F. Barrows, research director for the Austin-Western Co., Aurora, Ill., manufacturer of earth-moving and road-building equipment, was made an honorary member of the Soil Conservation Society of America at the society's national convention in Colorado Springs, Colo.

Mr. Barrows was instrumental in arranging for the publication of the society's first booklet, "Down the River", which describes the stake all Americans have in soil and water conservation. In his capacity as research director for Austin-Western, he has been investigating the ways in which heavy earth-moving equipment can be most efficiently and effectively used in conservation work.

Mr. Barrows is past president of the NIAA and a veteran of over 40 years with the Austin-Western organization.

O. F. Sieder, president of the H. K. Ferguson Co.

H. K. Ferguson Elections

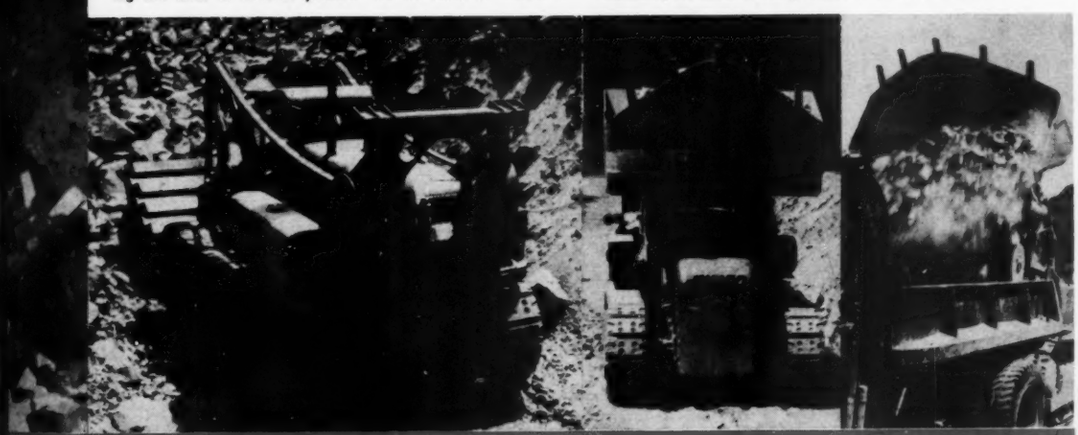
In elections at The H. K. Ferguson Co., 11th at Walnut Ave., Cleveland 14, Ohio, engineers and builders, O. F. Sieder has been made president, succeeding J. B. Bonny. Mr. Bonny was named chairman of the board, succeeding H. W. Morrison, who remains as a member of the seven-man board.

Executive vice president and general manager of Ferguson since he joined the firm in 1945, Mr. Sieder was industrial construction chief in the office of the Chief of Engineers during World War II. Before the war, he designed and supervised the construction of such buildings as the Bank of Manhattan, the Roxy Theater, and the Chanin Building in New York City.

WITH COST SAVING ADVANTAGES

The 105 is a modern tractor, designed to meet the needs of modern, up-to-date machinery users. The need of clutch pedals has been eliminated, the use of steering brakes has been removed and the need for shifting transmissions by hand is no more. The Eimco 105 works smoothly and efficiently with two small levers which control the tracks on their respective sides. The 105 may be shifted from forward to reverse independently on either track with no clutching — no shifting. Turns can be accomplished by twisting one lever to forward position and the other to reverse to provide spin turns, or longer turns can be effected by proper manipulation of these same handles. Gear changing is done with a separate small handle which may be actuated at any time during the operation of the machine.

The cycle of the loading unit is fast (see below) — digging or excavating is forward, discharge is overhead to the rear. Complete cycles from digging position to digging position average 10 to 15 seconds, which will permit loading of 6 to 9 yards per minute depending on material being loaded and travel distance.



EIMCO

8-9

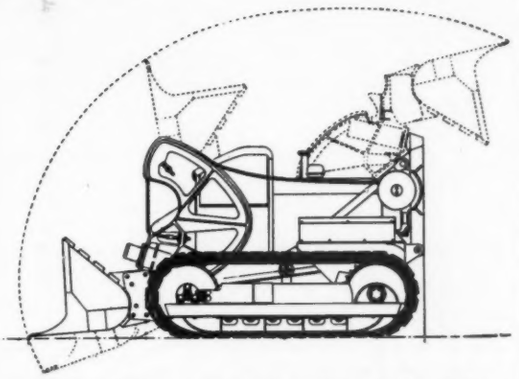
THE EIMCO CORPORATION

Salt Lake City, Utah, U.S.A.

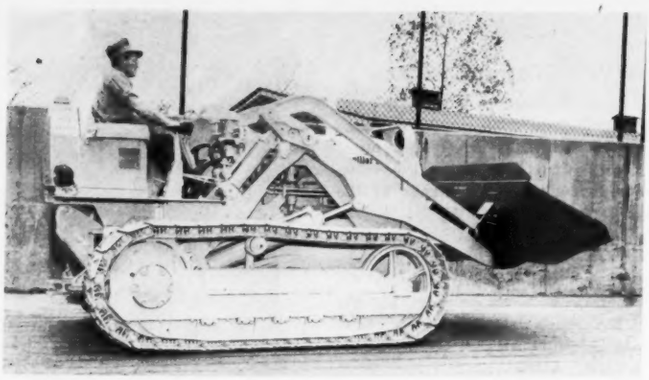
Export Office: Eimco Bldg., 52 South St., New York City

With the 105 you have the first and only truly modern crawler type unit for heavy work. It's fast. It needs only a minimum of attention. It requires the least in physical operating effort of any machine of its type. It will do many things that no other machine will do; and if mechanical attention is ever necessary, its various units are designed for easy accessibility so that the work to be done can be finished in only a fraction of the time required for a similar repair on any other prime mover.

Let us tell you about this machine: where the driver sits up front and can see what he's doing, where the loading equipment is fastened directly to the heavy main frame permitting free track oscillation at all times, that allows for speed changing under full power and load without sacrificing any advantage, that gives you a drawbar pull in the big class with a price in the small class, and many more exclusive advantages. Just write: The Eimco Corporation, P. O. Box 300, Salt Lake City 10, Utah.



Rocker-arm loading action provides fast, efficient loading. Bucket shown in the digging, carry and discharge positions pictured above.



The HT4 shovel with the new two-position bucket for excavating and stockpiling. It's a Caterpillar product.

Two-Position Bucket For Tractor-Loader

■ An improved standard bucket for the company's HT4 shovel has been developed by the Caterpillar Tractor Co., Peoria 8, Ill. The new two-position bucket will provide greater flexibility because of an adjustable pitch and a deeper bowl.

The two positions now available are achieved by changing the removable pins on each side of the bucket to either the forward or rear hinge points. The forward hinge point, used when stockpiling is to be done, gives a quicker tilt-back and less spillage because of a 10-degree rack-back at the ground line. A simple adjustment connecting the bucket to the rear hinge point retains the former digging and dumping angles desirable for excavating work. Redesigned teeth are also available for the new bucket.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 704.

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From Bangkok to Brooklyn 'round the World and 'round the clock, Whiteman Power Buggies, Screeding Machines and Floating-Finishing Machines are saving time, labor and money for leading Contractors. This rugged, dependable concrete equipment has proved to be one of the most productive of all investments in higher efficiency and greater profits. To learn how Whiteman equipment can make money for you, too, mail the coupon below right now!
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Please send prices, literature and name of distributor for ☐ Screeding Machines, ☐ Power Buggy ☐ Floating Finishing Machines.
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Vibrating Conveyors

■ A new line of vibrating conveyors and screens for hot or cold, dry or damp, and abrasive or corrosive bulk materials is announced by the Syntron Co., 227 Lexington Ave., Homer City, Pa. The equipment is of the compulsory-driven swinging-mass type in which two troughs or screens are mounted one above the other and connected by leaf springs. With the whole assembly supported on guide links, the troughs follow the movement of the eccentric drive.

The new Syntron vibrating conveyor.

Because of the "balanced dual-trough" principle used in their construction, the conveyors are said to have a low power requirement when running. Maximum power is required only for starting. There is a relatively high amplitude of 5/16 inch and a low frequency of about 1,000 vibrations per minute.

The vibrating conveyors, which can also be fitted with screen sections, are available in two capacities. The Model 2-B, with a maximum capacity of 80 tons per hour, is available in sections up to 65 feet long with a trough width of 20 inches. It also comes in sections up to 30 feet long in 40-inch trough widths.

The Model 6-F, with a maximum capacity of 280 tons per hour, is made in sections up to 175 feet in the 20-inch-wide trough and up to 100 feet in the 40-inch width. Sections can be set in for any desired length. Both models can be fitted with tubular troughs.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 722.

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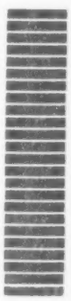

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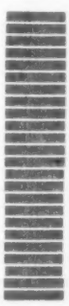

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Please send me information on new products and/or catalogs described in the editorial columns of this issue, as circled below.

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A power shovel loads the Kenworth Model 801 heavy-duty end-dump truck. The truck body is of all-welded steel.

Heavy-Duty Dump Truck Has 18-Ton Capacity

■ A heavy-duty end-dump earth-moving truck with a payload capacity of 36,000 pounds is made by the Kenworth Motor Truck Corp., 8801 E. Marginal Way, Seattle 11, Wash. The Model 801 truck carries 12 cubic yards measured struck and 14 cubic yards heaped. It is powered by a Cummins NHBID-600 diesel engine that delivers 200 hp at 2,100 rpm and 535 pound-feet torque at 1,400 rpm. The transmission used is a Fuller Model 5-F-1220 with five forward speeds and one reverse gear. Top road speed is 27.2 mph.

The truck body is of all-welded steel construction and is braced with 5 x 6 x 5/16-inch box section ribs with longitudinal reinforcement between the ribs at the body sides. It is made of steel plate wrap sheet with a 5/16-inch thickness at the bottom and ⅜ inch at the sides. There is a double bottom with ⅜-inch steel wear plate over 2 inches of wood filler. The body is flared from front to rear. The wheelbase of the unit is 13 feet 2½ inches with a length of 23 feet 1⅜ inches and a width of 10 feet 1¼ inches.

An offset one-man enclosed cab provides good visibility. There are access doors on both sides. The hoist is a single-acting, straddle mounted, two-cylinder, three-stage telescopic hoist.

For further information write to the company, or use the Request Card at page 18. Circle No. 724.

Glass Block Construction

■ Literature describing the use of glass blocks in the construction of industrial, commercial, and public buildings is available from the Pittsburgh Corning Corp., One Gateway Center, Pittsburgh 22, Pa.

Information on the physical performance of the glass blocks includes technical data on light transmission and insulation values. The booklet contains installation detail drawings and descriptions of accessory materials.

A feature of the catalog is an easy-to-read pictorial description that helps in the selection of the proper functional pattern for maximum daylighting results. Complete specifications are included.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 770.

Mobile Electric Set

■ An engine-generator mounted on two pneumatic tires for easy moving is made by the Wincharger Corp., Commerce Bldg., Sioux City, Iowa. The Winco F-1800 generator is rated at 1,000 to 1,350 watts of continuous operating capacity with a motor-starting capacity of 1,800 watts. Power supplied is ac, single-phase, 115-volt 60-cycle. The unit has a belted construction feature that permits the engine to operate at the manufacturer's recommended speed and the generator, at the specified 3,600 rpm.

For further information write to the company, or use the Request Card at page 18. Circle No. 699.

HOW A TOUGH BUILDING PROBLEM BECAME A 30% SAVING

with Coffing Quik-Lift Electric Hoists

The Problem

J. M. Odom, Austin, Texas, building constructor, faced heavy financial loss, when unforeseen setbacks during excavation put the construction of a stone church far behind schedule. Stone laying could not be completed in the remaining time — by conventional methods.

The Solution

Mr. Odom mounted four Coffing Quik-Lift Electric Hoists and trolleys on an I-beam which ran the length of the wall. Limestone blocks, weighing 300 to 500 lb., came from the quarry with Lewis pin holes in their upper edges. Using a simple chain sling and Lewis pins, Odom raised and positioned the blocks with the Coffing Quik-Lifts.

The Results

Quik-Lifts eliminated the need for a material tower and A-frames. Blocks were lifted and positioned on one operation instead of two. Quik-Lifts allowed greater control in positioning since load chain was plumb at all times. Manual handling of stone was virtually eliminated. The need for unskilled labor was reduced about 50 percent. This new method cut two months off the normal stone-laying time, while over-all savings were estimated to be about 30 percent.

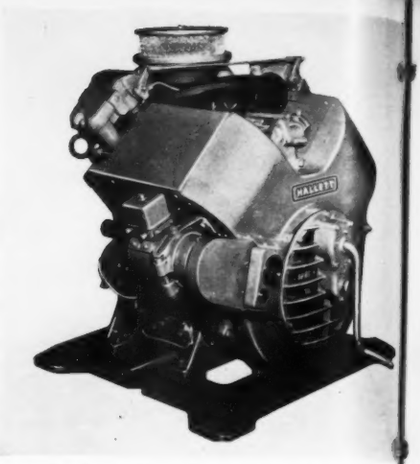
Wherever you see durable Coffing Quik-Lift Electric Hoists at work, you can be sure they are saving time, labor and costs. Choice of seventeen sizes with capacities up to 4,000 lb. to fit your requirements. For full information write for Bulletin *C2E*.

COFFING HOIST COMPANY
DANVILLE, ILLINOIS

Hoist-Alls • Safety-Pull Ratchet Lever Hoists • Mighty-Midget Pullers • Spur-Gear Hoists • Differential Chain Hoists • Load Binders • I-Beam Trolleys

Coffing Quik-Lift Electric Hoists were used to raise and place 500-lb. blocks of limestone. New system accounted for a 30 percent over-all saving in construction of a stone church.

The Midwest elevating grader attachment mounted on a Model 99-H Austin-Western motor grader.



The most recent Hallett 2-cylinder V-Type diesel engine is an air-cooled unit that delivers 13 horsepower in continuous operation at 1,800 rpm. The Model AC2 has a high-pressure solid injection system with individual injectors and injector pumps, by American Bosch, operated from the engine camshaft. For further information write to the Hallett Mfg. Co., 1601 W. Florence Ave,. Inglewood, Calif., or use the Request Card at page 18. Circle No. 803.

Elevating Attachment For Motor Graders

■ An elevating grader attachment for the all-wheel drive, all-wheel steer Austin-Western motor graders is made by the Midland Engineering Corp., Cedar Rapids, Iowa. The Midwest elevating grader installs on the Models 99-H and Master 99 graders.

The attachment has a 16-foot carrier to which a 3-foot extension can be added. A 42-inch-wide belt runs on troughing rollers with sealed ball bearing rollers. The hydraulic controls operate through the standard grader control levers.

An alloy-steel 30-inch-diameter disk can be adjusted for angle and location to suit different soil and moisture conditions. The machine has a double-flight auger-type cathole cleaner.

On the Model Master 99, the elevating grader is rated at 1,000 to 1,800 cubic yards per hour for casting and 500 to 800 cubic yards per hour for loading. The estimated output on the Model 99-H is 800 to 1,500 cubic yards per hour for casting and 400 to 700 cubic yards per hour for loading.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 785.

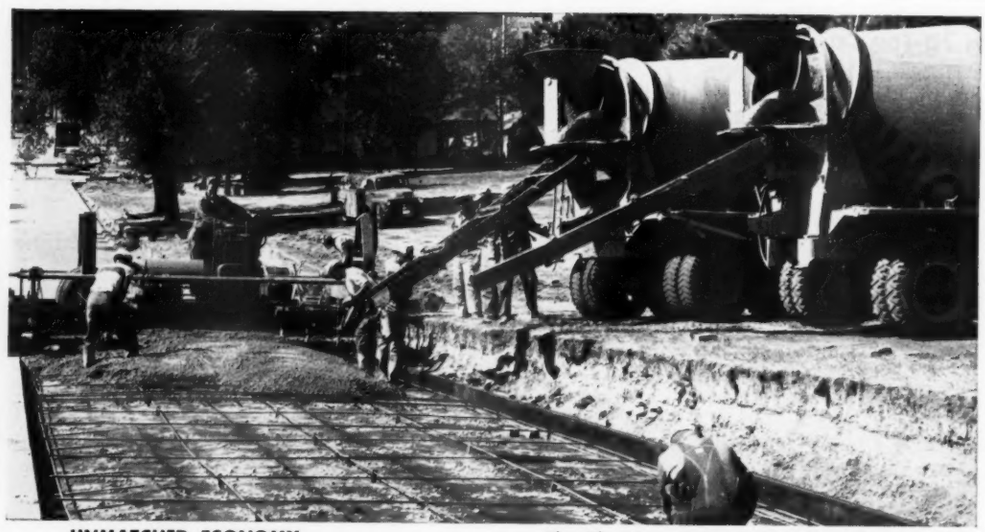
Tractor-Mounted Drill Is Maneuverable

■ Literature on its tractor-mounted rock drill is available from the Eugene Engineering Co., 1485 W. First St., Eugene, Oreg. A feature of the Eeco rock drill is that it may be positioned through its mobility to drill at any degree of a circle on either the horizontal or vertical plane. Any tractor with sufficient power to drive the compressor may be used.

The basic parts of the rig are covered in the booklet. This includes the power takeoff, compressor, base frame, mast, boom and quadrant, drill assembly, winch assembly, control panel, and hoist frame. Operational features described include dry drilling, flotation drilling, and changing drill position.

Average drilling speed recommended is 30 to 100 feet per hour with a 3-inch maximum bit size. The unit drills to a 40-foot depth.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 708.



UNMATCHED ECONOMY —
Action here is typical of the small capital investment required, even for major concrete projects.

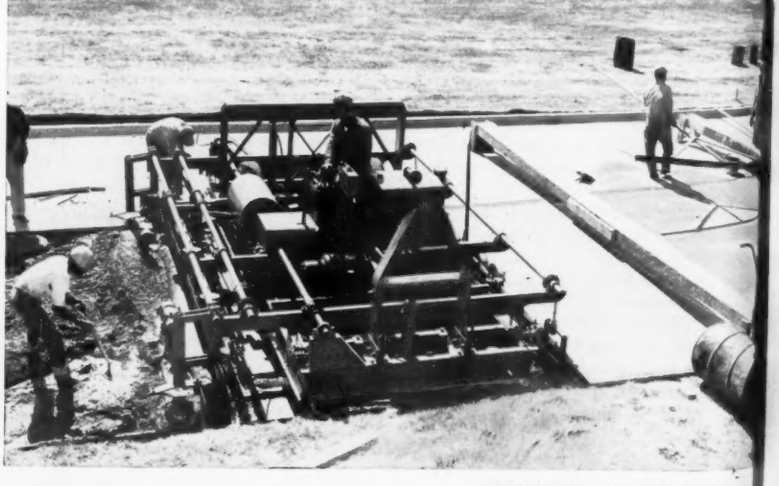
Flex-Plane's amazing Detroit Special eats up the yardage, even while putting in integral curb. Note in particular the small working crew.

SEE THIS. *leading midwestern contractor boils down paving spread to one machine minimum crew for all work*

A large midwestern contractor recently took a trip across his state to see a "Detroit Special" Finishing Machine in operation on a state highway job. As he was watching, the machine finished one section of paving, moved 16 blocks away and began finishing off another section. The time required for the entire move was less than 25 minutes. The contractor placed his order for a machine before he left the job site.

This is not an unusual occurrence but, rather, the general thing. It's difficult to impress a contractor with words . . . he wants to see it in action. And when he sees the Detroit Special's amazing mobility, its flexibility, its extreme adjustability,

EXCLUSIVE!
Custom-built telescopic width adjustment in three-inch increments from 15½-25 ft. The ready-widening and the instant portability — exclusive with Detroit Special — mean this contractor can take on any job in his area right now.



The Little Giant excavators are available with crawler tracks or for truck mounting. They are convertible to shovel, crane and backhoe.

Line of Excavators

■ A line of excavators convertible to shovel, crane, and backhoe is made by Little Giant Crane & Shovel, Inc., 1580 E. Howard Drive, Des Moines, Iowa. The Little Giant line includes the ½-yard Model SA and the ⅜-yard Model 38A, both of which are available with crawler tracks or for truck mounting. A swamp model has 48-inch one-piece track shoes. Also offered is the Model L, a ⅓-yard unit that can be mounted on any 1½ to 2-ton single-axle truck.

The newly designed excavators are equipped with the Shafer ConCaVex roller bearings on all main shafts. The machines turn on multiple rows of large steel balls which roll in precision-machined races in the turntable. The design eliminates rollers and center pin.

Other features include positive clutches that are readily accessible and easy to maintain and better bucket control through an automatic cable crowd and positive retract.

The excavators are reported to average 750 yards per eight-hour shift in good digging. The shovel dumps at a height of 16 feet at a radius of up to 22 feet.

For further information write to the company, or use the Request Card at page 18. Circle No. 761.

The Kelley Compactor power float saves finishing time.

Compaction Machine For Floor Finishing

■ A portable machine for the compaction-floating of harsh, dry concrete or asphalt mastic mixes used on floors is announced by the Kelley Machine Division, Wiesner-Rapp Co., Inc., 1600 Seneca St., Buffalo 10, N. Y. The compaction-floating action is said to compact, densify, and float harsher and drier mixes better than hand or other mechanical means.

The Kelley Compactor power float consists of a vertical power head which provides power through special alloy-steel gearing for the rotation of a heavy float disk. Four cast-steel hammers are pivoted on shafts attached to the body of the machine. The heads of these hammers ride on a cam track on the balanced float disk, and as the disk rotates, the four hammers are raised and dropped. The heavy, rapid impact of the compacting hammers on the rotating disk works the slab to a smooth level surface for proper finishing.

The manufacturer states that the use of the machine eliminates lengthy waiting periods and produces dust-free, dense, and waterproof floors. It is said to save finishing time and cement, increase durability and wear-resistance, produce an inseparable bond for topping-type floors, compaction-float surface hardeners, and minimize shrinkage.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 786.

Data on Radial Saw

■ A shop-type radial saw is illustrated in literature from the Walker-Turner Division, Kearney & Trecker Corp., Plainfield, N. J. The saw is available with a 6-inch dado blade that cuts 1⅝ inches deep, an 8-inch blade that cuts 2⅝ inches deep, and a 9-inch blade that cuts up to 3⅛ inches. Using the 9-inch blade, the unit rips to the center of a 48-inch panel and cross-cuts 3-inch lumber 18½ inches wide and 1-inch lumber 19¾ inches wide.

The table top for the saw is of laminated maple with a removable center fence. The saw's column may be raised 7¾ inches, and the ram travels 22¾ inches. Two models offered have either a single phase or 3-phase 1½-hp motor as a power unit.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 701.

FINEST FINISH is possible because the Detroit Special is designed to "micro-screed." Extra-wide screed bottoms guarantee at least 12% more finishing action per square yard. Rugged design of machine eliminates sway. Note clutch for independently engaging rear screed — another Flex-Plane feature.

and the way it levels and finishes a pour in true workmanlike fashion, it requires very little selling to close the order.

In fact, the contractor here quickly discovered the Detroit Special made it possible to eliminate all other mechanical equipment and reduce his labor force to a bare minimum on municipal paving work without sacrificing quality or speed.

The Detroit Special is the most versatile Finishing Machine ever made. A built-in hydraulic transportation rig transforms it into its own trailer in a matter of seconds. There are no expensive crane handling, no time consuming attachments; just the flick of a hydraulic lever. Consequently, there is a minimum of crew "downtime."

Flex-Plane builds the Detroit Special to your specifications. It is completely telescopic . . . no sections to be added or taken away . . . and it can be adjusted for whatever paving widths specified. For example, two of the more popular telescopic width adjustments have been from 10 ft.-20 ft. in 3" increments; and from 20 to 32 feet in 3" increments.

But why not get the entire story? Write for the new Detroit Special Booklet — a handbook of modern finishing methods. It's yours for the asking.

PORTABILITY PLUS no crane handling or truck carting. Simply back a batch truck into position, press a button and it's ready to roll to or from the job. It will lift itself on and off the forms.

THE FLEXIBLE ROAD JOINT MACHINE CO.

Warren, Ohio

Please send additional data on the Detroit Special Finishing Machine.

Name _____

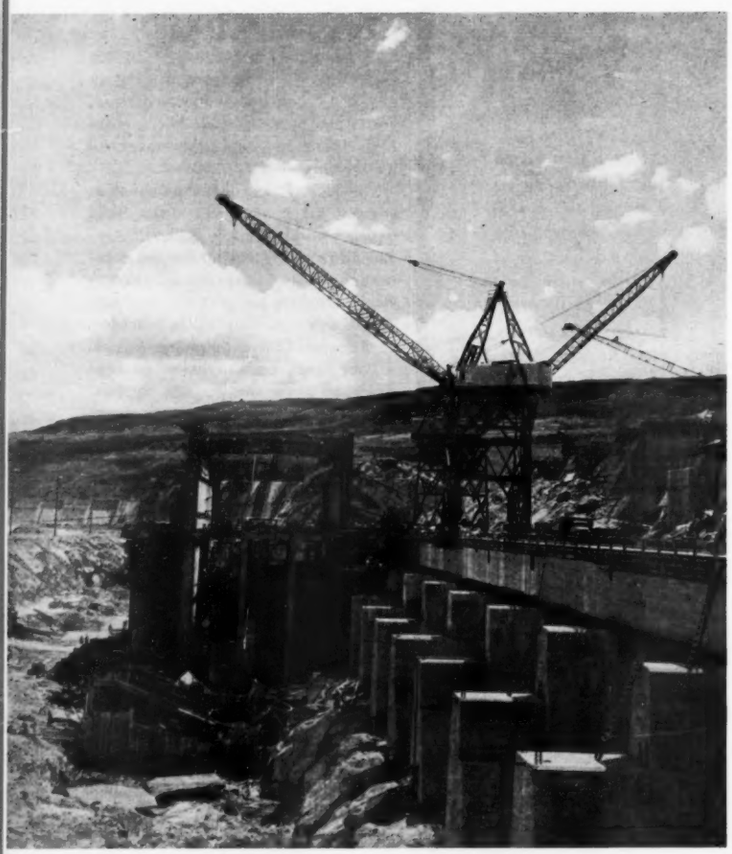
Company _____

Address _____

City _____ State _____

Some of the Blaw-Knox prefabbed steel forms used on the Chief Joseph project. Form Engineering Co. and William Schutte also supplied forms for the 800,000 cubic yards of concrete.

Steel Forms Are Used On Big Powerhouse



Concrete pours for the world's largest powerhouse at Chief Joseph Dam are handled by these Washington revolver cranes with 155-foot booms.

By Ray Day

STEEL FORMS, rather than the conventional wooden type, are being used in placing 800,000 cubic yards of concrete for the intake and powerhouse at Chief Joseph Dam on the Columbia River in Washington. In many cases, the forms—ribs, wales, and lining—consist entirely of steel. In other work—on the draft tubes, for instance — only the intricate ribs, wales, and skeletal framework are steel; the carpenter crew covers the skeletons with lumber facing.

Traveling steel forms are also in use. Many of the big single and double-story galleries are formed with these panels. The massive training arch at the top of each inlet throat in the intake structure is supported during a pour by one of these 17½-ton forms. Instead of the usual assortment of spreaders and shores, the form has steel arms, ratchets, and jacks which permit its retraction at stripping time. One of the concrete-placing cranes handles this form in one lift.

Steel panels 32 feet high permit pours up to 70 feet long in some of the massive solid walls. The weight of fluid concrete against these high panels would be enormous if the rate of placement were not slowed to reduce extreme form pressures.

Columbia River Constructors, a contractor combine of nine joint-venture firms sponsored by Morrison-Knudsen Co., Inc., is doing the unusual concrete work under a $39,749,997 U. S. Army Corps of Engineers contract. For the first time, the combine has gone to 55,000-pound tensile strength steel in the Williams tie bolts which hold the forms together. These bolts are not crowded, and each one must support as high as 27,000 pounds of dead pull at maximum pressure on the high pours.

The size and scope of the concrete

Re-use of 32-foot-high panels on Chief Joseph structure cuts costs by permitting large unit pours

One of the dam's structures with various types of forms in place. About 5,600,000 square feet of forming will be used on both the intake and powerhouse.

work favored forms which could be re-used. Ultimately, the powerhouse and intake structures will be 2,036 feet long, and the first hydroelectric turbine installation calls for 16 complete units and an additional 4 units of substructure only. The powerhouse will contain 27 turbines, each rated at 100,000 horsepower, which will be strung down the river in a straight line at virtual right angles from the dam.

It is a big concrete job measured by any standard. Final plans call for an average of 7 square feet for each one of the 800,000 cubic yards of concrete in forming area, a total of 5,600,000 square feet of forming. Project officials estimate that about half this area will be available in steel forms on the job. By re-using these forms, 80 per cent of the material will be formed against the prefabbed steel panels. Wood forms are still used, however, where a considerable amount of embedded metal items protrude from the sides of a pour and where there are small and untypical transitions.

World's Biggest Powerhouse

Although there is one power installation at Grand Coulee Dam which will turn out a few more kilowatts than the Chief Joseph setup, there is no single powerhouse as huge as the one at Chief Joseph. Ultimate-rating-comparisons of major Pacific Northwest dams rank like this:

Name of Dam	Power Capacity
Grand Coulee	1,944,000 kw
Chief Joseph	1,728,000 kw
Priest Rapids	1,219,000 kw
The Dalles	980,000 kw
McNary	910,000 kw
Libby	600,000 kw
Bonneville	518,400 kw
Hungry Horse	285,000 kw
Rock Island	245,000 kw
Albeni Falls	42,600 kw

The Chief Joseph hydroelectric development consists of a reservoir area of 480,000 acre-feet behind two structures. The first of these structures, Chief Joseph Dam proper, is being built under a separate contract. The dam measures 922 feet in the spillway section and 1,342 feet in abutments. The 2,036-foot-long intake structure and powerhouse are tied monolithically to concrete gravity-type dikes at each end.

The maximum height of the powerhouse is 150 feet, and the intake structure is at a higher level to provide for the 165-foot power drop through the penstocks and turbines. The initial power installation will place 16 turbines, each rated at 100,000 horsepower, and 16 generators, each rated at 64,000 kilowatts, in the dam. Later, complements of 4 and 7 units will round out the installation.

Under a previous contract, a channel 3,000 feet long, 1,000 feet wide, and 30 feet deep, was cut through solid rock around the left abutment of the dam. This will allow water to pond ahead of the intake structure and turn the turbines as it roars down the moderate 165-foot power drop to rejoin the river below the dam.

Manufacturers Build Forms

When CRC's management decided to do the concrete forming job with steel instead of wood, the order for forms was so large that three manufacturers were called in to insure speedy first deliveries. Part of the manufacturing job went to Blaw-Knox, part to the San Antonio, Texas, firm of Form Engineering Co., and part to William Schutte, associated with Chicago Bridge & Iron Works. The intricate draft tube forms were broken down into 5 units to correspond to the pours. While crews waited for the first units to arrive, four draft tubes and other preliminary forms were built with conventional wood to get the powerhouse under way.

Most of the intake and powerhouse areas were already stripped to a point close to rock grade under a previous contract so that excavating the remaining few feet to solid rock was mostly a wagon drill and jackhammer job for Columbia River Contractors.

Forming in High Gear

When CONTRACTORS AND ENGINEERS visited the project, the work was at an all-time peak. The massive downstream front of the powerhouse was a gigantic perspective of forms, men, machinery, and concrete. New forms previously ordered were arriving daily. Skeleton-type forms were sent to the carpenter yard below the powerhouse. There, facing lumber was cut to required length by power saw equipment. In general, any concrete face subject to weathering or hydraulic cavitation must be formed with wood-faced forms; all others can use steel frames and facing.

Concrete-placing cranes handle

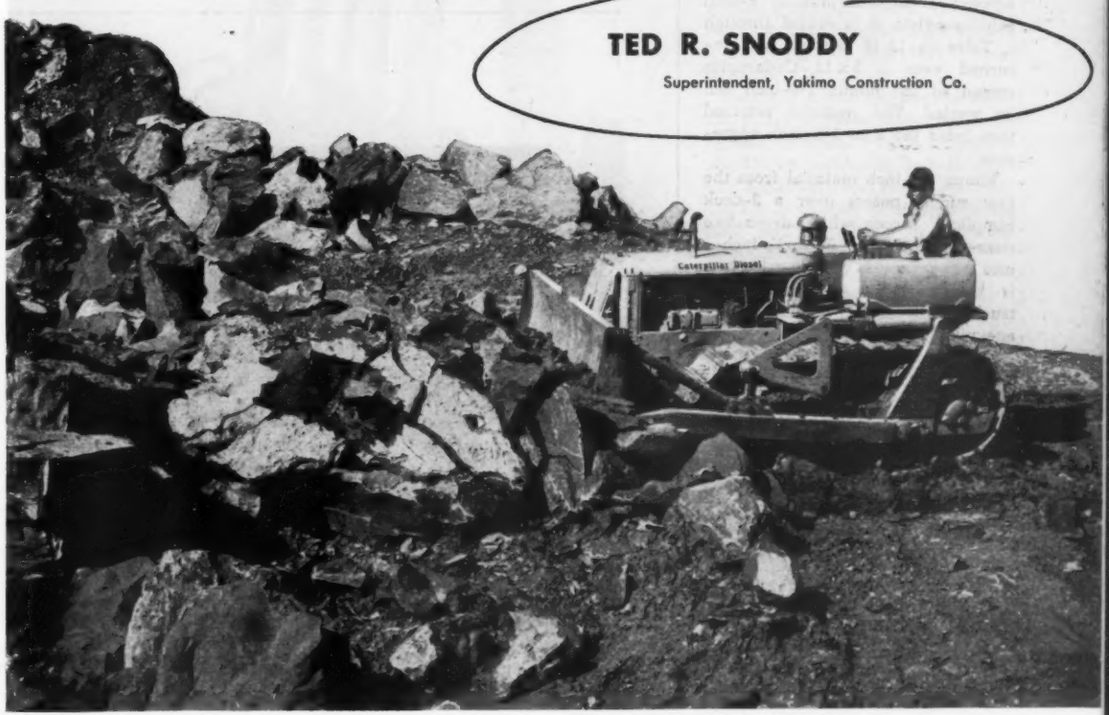
(Continued on next page)

"When I bought this CAT* D4 Tractor, it took the place of 20 men.

"It saved me about $100 a day on expenses.

"This tractor has paid for itself about four times and no repairs."

TED R. SNODDY
Superintendent, Yakimo Construction Co.



A Caterpillar D4 Tractor equipped with a No. 4S Bulldozer clears rock in the quarry for easy access by trucks. Owned by Yakimo Construction Co., Dallas, Tex., this equipment is working on the Blakely Mt. Dam, Mt. Pine, Ark. The Yakimo Construction Co. has the rock job for the 4,500,000-yard dam.

What else is there to say?

The money-saving performance of this Caterpillar D4 Tractor and No. 4S Bulldozer speaks for itself. Ask your Caterpillar Dealer for a profit-building demonstration on *your* job.

Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

(Continued from preceding page)
the forms from setting to stripping. A general practice uses Burke steel scaffold brackets and fir planking to make the panels safe for workmen installing the forms. In addition to the high-tensile tie bolts on the high forms, Williams form ties are used in many places. Mass pours in the intake structure, which call for cantilevered steel forms made by Blaw-Knox, permit 5-foot lifts. To help hold these forms on curves, a few Williams hairpins are embedded in the previous lift and, with the help of a tie rod, hold the forms in place.

Concrete Production Setup

Concrete aggregates and sand are being produced from a pit on the right bank of the Columbia River about 3 miles below the dam site. The aggregate production contract is held by J. G. Shotwell, a commercial gravel producer.

Raw pit loading is a job for a Bucyrus-Erie 38-B shovel, which loads two Euclid 87 FD's and two 49 FD's. These four units can haul 10-yard loads. The material is dumped to a primary hopper, then passes through a trommel separator equipped with 6½-inch screen. Plus 6-inch material passes through an Austin-Western 26 x 40 jaw crusher and over a short vibrating screen where the 1½-inch-minus crushed particles are removed and wasted. The remainder joins material passing through the trommel and goes on up to the first raw surge pile.

After separation into 6 to 3-inch and 3 to 1½-inch aggregate, the dry material passes to rotating washing screens. If any surplus of 6-inch cobbles exists, it is routed through a Telsmith 13-B crusher and returned over a 5 x 12 Cedarapids screen so the minus 1½-inch can be wasted. The material retained then joins the 3 to 1½-inch aggregate.

Minus 1½-inch material from the raw supply passes over a 3-deck Simplicity screen which drops two sizes—1½ to ¾ and ¾ to ¼-inch—into bunkers. All coarse aggregate is bunker-loaded to the hauling trucks, and there are no surge storage piles.

Sand is made by a direct process. The raw material first passes over a 4 x 12 Symons screen which rejects the plus 4 particles. No. 8 sand comes off the bottom deck and enters a storage tank. This tank automatically sluices out a waste pipe to storage if it fills with sand faster than trucks can haul the material away. The minus No. 16 sand size produced through a pair of V-screens enters the same type of storage. The minus No. 30 is produced in sand classifiers which also wash the material. This machine is a twin-screw Eagle. Minus 8 and minus 16 sizes pass through a Wemco 48-inch single sand washer.

Sand sizing is controlled by hauling in 50 and 100-mesh fines, if needed, from auxiliary sources of supply and feeding them in with the raw material. An excellent haul road is maintained for a fleet of four Kenworth trucks with Omaha Standard 22-yard hauling bodies. Every hopper loading fine, hard-to-move material to these units is equipped with Syntron electric vibrators.

Because of the general lack of mass concrete in the intake and powerhouse, artificial cooling is not required. Aggregates are batched with Permanente cement by a modified Johnson fully-automatic batching plant. Darex air-entraining agent is used. The dry batches drop to a pair of Koehring 4-yard tilting mixers, and the mixed material is dumped via transfer hopper to three 25-ton General Electric locomotives and cars. The single car ahead of each locomotive has rack space for three 4-yard Gar-Bro concrete buckets. Two full buckets are carried per load, leaving a place free for the empty bucket coming in on the placing crane.

Plenty of Placing Cranes

A veritable network of crane booms is made by the high-capacity units placing each day's many concrete pours. Two Washington gantry-mounted revolver cranes with 155-foot booms operate 60 feet above deck level just above the powerhouse structure. The machines, capable of picking up a loaded 4-yard concrete bucket with their booms laid flat, place all the concrete in the powerhouse. These revolver cranes were erected by a pair of crawler-mounted Manitowoc 4500's, with 142-foot booms, which placed the first concrete in both structures and are now used for miscellaneous pours. One of the 4500's is also doing considerable dragline work in connection with intake structure excavation.

The most unique placing crane is a 450 Special Bucyrus-Monighan walking machine, which was set up on a special dolly mounted on twin railroad tracks. The walking dragline weighs about a million pounds; and with its special carriage it weighs 640 tons—1,280,000 pounds. Its enormous capacity enables it to handle 22-ton lifts with its 204-foot boom flat and it easily handles the 17½-ton traveling intake form.

The special carriage consists of two 8-wheel sets of trucks on each railroad track, a heavy 36-inch I-beam frame, and a steel-plate floor 2 inches thick on which the Monighan's walking base rests. The trucks are 30 feet apart and the railroad tracks are on 30-foot centers, making the rolling platform square. To get the machine onto the carriage, two concrete retaining walls were built to hold the ramp earth, then the machine walked up under its own power, adjusted its steps toward the last, and then sat down.

Washington Iron Works made the

Pave the way

FOR GREATER ECONOMY WITH C

CP SINKER DRILLS

Whatever your drilling need, whether it be for a lightweight CP-22 (28 lb.) or the extra heavy duty CP-50N (102 lb.) you'll get the same rugged performance on every type of dry or wet drilling. Valve design conserves air and maintains maximum drill efficiency . . . full cushioning reduces maintenance.

G-300 WAGON DRILL

Affords fast, accurate drilling from any angle. Tubular chassis and drill carriage assure maximum stability and strength with no added weight. Enables the operator to utilize the high drilling speed and powerful rotation of the CP-70-NDC Drifter to best advantage. And the G-150 light Wagon Drill for drilling holes to 20 feet provides an even more maneuverable unit when combined with heavy sinkers and light weight drifters.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS

CONTRACTORS AND ENGINEERS

Silhouetted against the sky, a Washington gantry-mounted revolver crane works above the deck level on the powerhouse structure.

special carriage. Each set of trucks is driven independently by a Master electric motor, a Western 7:1 gear-reduction box, and a chain drive. The machine has about 2,000 feet of railroad track space on which to move the full length of the job. It will place most of the intake structure, which represents about 400,000 cubic yards of concrete. When that job is finished, it will move back down to its walking pontoons to do a digging job. The Monighan is expected to do all the excavation necessary to rip out the earth and rock cofferdam now protecting the long powerhouse in the tailrace area.

The enormous crane capacity available, along with a dependable aggregate production and mixing setup, is permitting an outfit scheduled at 30,000 cubic yards a month to place 50,000 cubic yards in the same amount of time. Operations are on a 5-day, 2-shift basis. Cost details on the steel forming are a company secret, but the prefabbed steel panels cost much less to prepare than comparable wood forms.

Columbia River Constructors began its work in 1952, and placed the first intake-structure concrete in September of that year. This intake and powerhouse contract, expected to be completed far ahead of the July, 1956, schedule, is now 7 per cent ahead of schedule with more than 35 per cent of the concrete in place.

The joint-venture combine includes, in addition to Morrison-Knudsen Co., Inc., General Construction Co.; Henry J. Kaiser; Peter Kiewit Sons' Co.; McDonald, Young & Nelson; Macco Corp.; B. Perini & Sons; Puget Sound Bridge & Dredging Co.; and Walsh Construction Co.

Principal subcontractors, in addition to aggregate-producer Shotwell, include American Pipe & Construction Co. on penstocks, both Rutherford & Skoubye and Steel Construction Co. of Oregon on the reinforcing steel, and Morgan Co. on electrical installations.

Personnel

CRC's field operations are directed by Project Manager Phil Soukup, assisted by G. M. Shupe, project engineer; Pete Piedmont, general superintendent; R. I. Gutru, office manager; Charles Raiswig, carpenter superintendent; and R. W. Hixson, concrete superintendent.

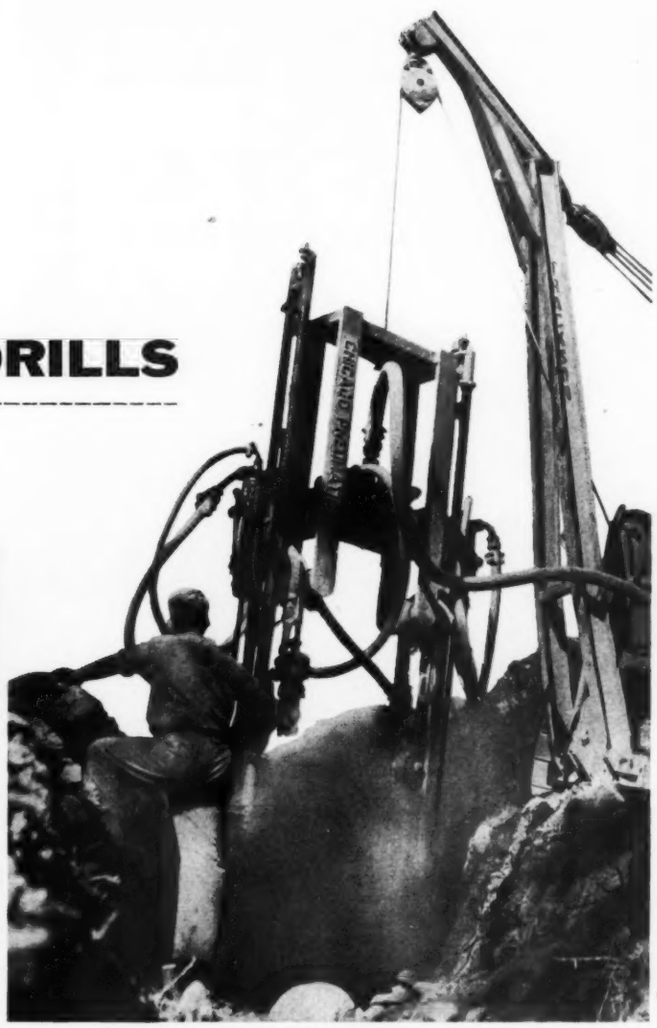
Colonel N. A. Matthias, district engineer, with headquarters at Seattle, has general supervision of the project. Resident Engineer is C. H. Wagner, assisted by Rufus Jackson, Alf Lundly, Byno Jeter, and Charles Golder. THE END

Photocopying Equipment

■ A brochure describing a line of transfer-process photocopying equipment and materials has been issued by the Peerless Photo Products, Inc., Shoreham, Long Island, N. Y. Recently announced Dri-Stat equipment includes a new flat-bed printer used to expose the original matter. Also shown are two processing units and a combination rotary printer and processor.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 795.

TH CP ROCK DRILLS



CP DEMOLITION TOOLS

Really pave the way for demolition economy! Their smooth running and throttling action makes them easy to handle and hold where footing is hazardous. Capacities range from the CP-111 (25 lb. class) to the CP-117 (80 lb. class).

GTD-300 TRENCHDRIL

Suspended from a tractor boom, the mobile GTD-300 handles six foot steel changes easily. Maximum penetration is obtained by the combination of powerful feed, strong rotation, and the constant air blast which gets you quickly through the dirt capping to solid rock . . . keeps holes free of overburden.

Chicago Pneumatic 8 East 44th Street, New York 17, N. Y.

DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

A crane-carrier mounting is now made for the Schield Bantam ⅜-yard excavator-crane. Power is supplied by a Hercules gasoline engine.

Crane Carrier Mounting For Excavator-Crane

■ The addition of a specially designed crane carrier to the mountings available for its Model T-35 shovel-crane is announced by the Schield Bantam Co., Waverly, Iowa. Designed with a 12-inch I-beam frame, large tires, and axles rated at 26,000 pounds, the new Bantam crane carrier has stability and operating versatility. It has a 16½-foot turning radius. A differential lockout on the driving axles provides positive drive from both axles under any ground conditions.

The new carrier has a 148-inch wheelbase and is built with four-wheel drive on 10 wheels with 8:25 x 20 tires. The power unit is a Hercules JXC 6-cylinder engine developing 113 hp at 3,200 rpm. A 5-speed transmission with dual range gives up to 10 speeds forward and 2 reverse.

The unit has a 236-inch over-all length and a 96-inch width. The height from the ground to the top of the basic unit cab, 9 feet and 6⅜ inches, provides clearance for highway travel and work inside buildings. Total weight of the carrier with outriggers and fenders but without the basic Bantam unit, counterweight, and front-end attachment is 11,660 pounds.

A feature of the new carrier is its two-position mounting for the upper machinery. In the forward position, with the basic machine mounted 24 inches ahead of the bogie center on the carrier, the machine gives the operator the best use of the unit's 12,000-pound lifting capacity. This forward position also gives greater stability for work with the clamshell, dragline, magnet crane, pile driver, and concrete handling attachments.

The rear mounting position, 6 inches ahead of the bogie center, is best for digging operations with the back hoe and shovel attachments, as well as for backfilling operations. The ⅜-yard 5 to 6-ton Schield Bantam rig is now offered in a wide choice of mountings including the new crane carrier, a crawler undercarriage, and remanufactured trucks.

For further information write to the company, or use the Request Card at page 18. Circle No. 777.

Discusses Air Entrainment

■ Literature discussing concrete air-entrainment is available from the Dewey & Almy Chemical Co., 62 Whittemore Ave., Cambridge 40, Mass. The brochure describes the use of purposefully entrained air in controlled amounts to improve the durability of concrete by increasing its resistance to the disintegrating effect of freezing and thawing and de-icing salts. Sections are devoted to discussing the advantages of air-entrainment from the point of view of the contractor, the engineer, the ready-mix concrete manufacturer, and the concrete-products manufacturer.

The company's air entraining agent, Darex AEA, is described as a neutral water-soluble compound, dark brown in color, and with about the viscosity of water. It comes ready to use and requires no agitation and no mixing with corrosive chemicals or water.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 725.

GREATER WORK CAPACITY
with LOWER EQUIPMENT INVESTMENT
DIGGER • SHOVEL • CRANE
HOPTO
MODELS AVAILABLE
SPC— Shown at right
TM— For Mounting on any 1½ Ton Truck or Larger
CTM—For Rear-End Mounting on Crawler Tractors
SPT— Self-Powered Trailer Type
PTO—Power Take-Off Powered Trailer Type

EASY-TO-OPERATE HOPTO LOADS, TRENCHES, EXCAVATES!

Here's the low-cost, easily operated unit you have been waiting for! The new and improved Model SPC combines all the features of the other work-hungry HOPTO models plus the light bearing pressure of 3pounds per square inch necessary for work on swampy soils. Bearing pressure of 17" track pads is so light that unit may be moved across landscaped areas without disturbing turf.

Complete unit is Badger built. The 20% overload safety factor and the built in by-pass and relief valves protect the completely hydraulic Model SPC. Four easily-actuated levers conveniently banked for the operator control every movement of HOPTO from 190° swing to 16'4" reach . . . from 11'4" digging depth to hydraulic control of bucket that permits 'straight-down' excavation for foundations, septic tanks, etc.

In average to heavy soils, the Model SPC has an hourly trenching capacity of 60' of 2' trench 6' deep. Fast cycling and ease of operation gives HOPTO a loading capacity of 40 cubic yards per hour with a quarter-yard bucket. Larger buckets are available for handling bulky materials. With backhoe, HOPTO has a loading clearance of 8'6"; 10' clearance with shovel bucket.

OPTIONAL EQUIPMENT
MAKES HOPTO A MOBILE CRANE

A crane boom to replace dipper stick converts HOPTO into a mobile crane for spotting timbers, trusses, steel . . . for placing heavy equipment, spotting culvert sections, unloading bulky equipment. Crane boom may also be equipped with hydraulically controlled grapple with a loading clearance of 18'. Same attachments are available for TM Model shown at left.

MODEL TM HOPTO MOUNTS ON ANY 1½ TON OR LARGER TRUCK. HOPTO AND A 'CHARGED-OFF' TRUCK CAN GIVE YOU A MOBILE DIGGER SHOVEL CRANE AT LOWEST COST
HOPTO

for complete information on the model best suited for your particular needs. HOPTO's low cost holds down equipment investment; helps you maintain or exceed schedules!

BADGER MACHINE CO.
WINONA, MINNESOTA • DEPT. E

WYCO 2 H.P. UNIVERSAL ELECTRIC MOTOR VIBRATOR

Place Concrete faster! Light • Powerful

WRITE FOR CATALOG WYCO GASOLINE AND ELECTRIC VIBRATORS

$297.00 UP FOB CHICAGO

WYZENBEEK & STAFF, INC.
223 NO. CALIFORNIA AVE. CHICAGO, ILLINOIS

Give to the CANCER FUND

A Tilley kerosene-burning lamp.

Floodlight Projector

■ A weatherproof floodlight projector for construction use that burns for 40 hours on six pints of kerosene or No. 1 diesel oil is available from Wm. W. Lee & Son, 20 E. Jackson Blvd., Chicago 4, Ill. The Tilley lamp produces a white light of 5,000 candle power and throws a beam approximately 150 x 75 feet. The lamp burns vaporized kerosene on an incandescent mantle. It is available on a 5 to 8-foot telescopic tripod with a turntable top or on a short stand.

The initial vaporization takes place by means of an asbestos clip soaked in wood alcohol, which is lighted and attached to the vaporizing tube. The light is thrown forward by a 14-inch-diameter parabolic reflector.

For further information write to the company, or use the Request Card at page 18. Circle No. 751.

Catalog on Rock Drills

■ New literature on its line of rock drills is offered by the Joy Mfg. Co., Henry W. Oliver Bldg., Pittsburgh 22, Pa. The detailed description of the Silver Streak rock drills includes specifications and photographs.

Special developments in the line, such as cadmium plating and the company's patented dual valve, are described. The hand-held drills are built in four sizes. In addition to this main line, the bulletin covers a plug drill, spaders, and other related tools.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 775.

All-Steel Tool Box In Trailer Model

■ A pneumatic-tired trailer-type steel tool box for contractors is announced by Aeroil Products Co., Inc., 69 Wesley St., South Hackensack, N. J. Featuring rigid telescoping legs at each end, this 6-foot box has an over-all length of 114½ inches including tow frame, an over-all height of 49 inches, and a loading height of 41 inches. Load capacity of the tool box is rated at 2,000 pounds.

The tool box has one padlock that protects the entire box. One man can open or close lids from a single position. In locking, the handles pull the covers in tight where they lock under the box rim. The manufacturer points out that it is impossible to open either cover unless the locking handles are released on this weatherproof unit.

Another feature is that the tow eye can be placed at any height from 24 to 38 inches to accommodate various towing trucks. Partitions and sliding trays are optional equipment.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 735.

This Aeroil 6-foot trailer-type tool box has a capacity of 2,000 pounds.

FLECO ROOT RAKES SPEED CLEARING OF OHIO "JUNGLE"

Correctly-curved teeth of this Fleco Root Rake give loads of brush, trees and roots a rolling action, requiring less tractive effort. Teeth may be spaced at any interval you desire. This Fleco 7S Root Rake, of Fred J. Schultz and Son, is equipped with top guards for added load capacity.

The 1100-acre site of the new City of Toledo Express Airport included 620 acres of matted vegetation that equalled any jungle growth. Stands of 6" to 18" timber were choked by tangled underbrush. This "jungle" had to be cleared.

Fred J. Schultz and Son, Toledo contractors, took the job. All trees, brush and roots were to be removed, piled and burned. The burning proved to be the most difficult part of the contract—until two Fleco Root Rakes, teamed with Cat D7 Tractors, took over the piling operations. Fleco Root Rakes are specialists in this work, having been designed specifically for just such tasks.

The Fleco Rakes took out surface roots, cleared the underbrush and piled the debris in one pass. Dirt was sifted out by the tough, heat-treated cast alloy steel teeth, leaving piles dirt-free for faster, easier burning. The Rakes easily handled 6" to 10" logs, stumps and small rocks and then moved on to other tough clearing projects.

The Schultz firm cleared five acres of the "jungle" each 9-hour day, earning great savings from the faster, easier piling and burning.

You, too, can save time and money with specialized Fleco land-clearing tools. Ask your Fleco-Caterpillar Dealer to recommend the Fleco equipment to speed your clearing work. There's no obligation, so call or write today!

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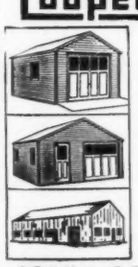

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The open-end cutterhead of the 18-inch hydraulic dredge James Wilkinson is carried on a 55-foot ladder and driven by a 200-hp electric motor.
C. & E. Photo

Sand Drains Stabilize Subgrade for New Road

Water is forced from silty subsoil to ground surfa as hydraulic dredge places fill for bridge approach

INVERTED SAND DRAINS permit water to flow upward from a mucky silt subsoil material to the ground surface, helping to stabilize the subgrade for a new bridge approach on highway U. S. 51 at La Salle, Ill. The road connects the existing Illinois River bridge with a new structure spanning the Illinois and Michigan Canal and tracks of the Chicago, Rock Island, and Pacific Railroad.

The location of the approach road, which improves the grade and curvature at the river bridge, brings the highway into La Salle on the new overpass about two blocks east of the old entrance. This alignment crosses the old roadbed and passes through an abandoned dumping ground to span 4,300 feet of soft bottomland.

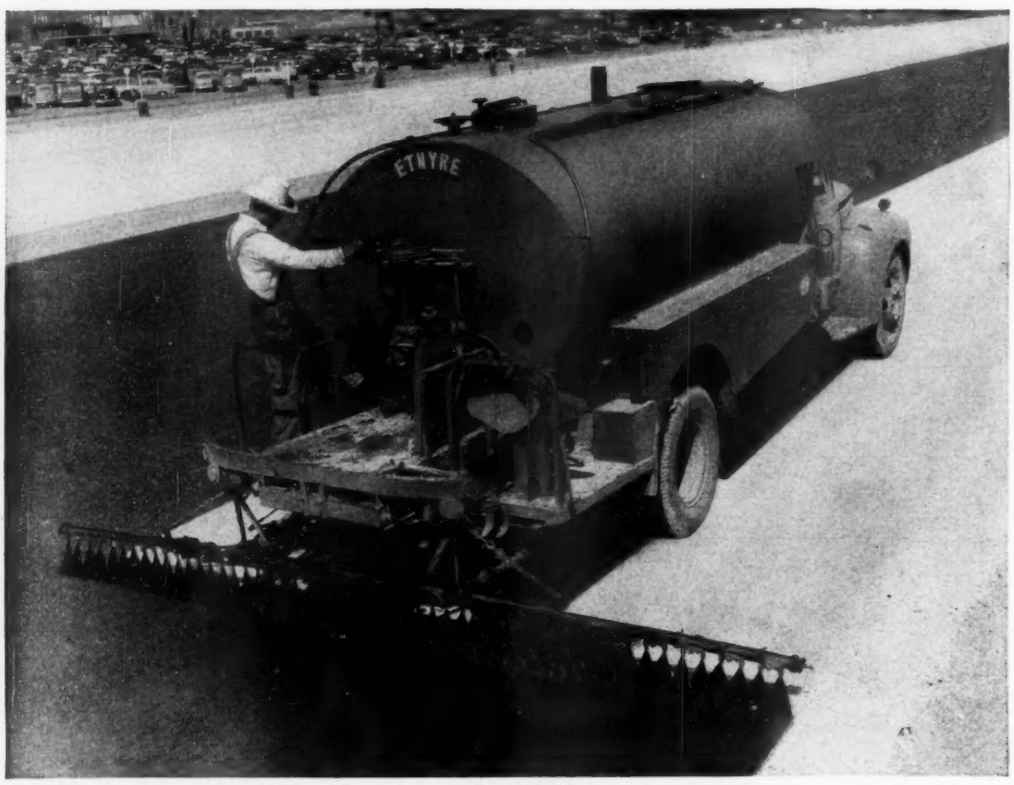
A wide sand blanket and 5 to 1 roadway slopes distribute the fill loads over a large area of the silty subsoil. Fills consist of more than 500,000 cubic yards of sand and gravel dredged from the river bottom and pumped into place by a hydraulic dredge. This is probably the first highway fill in Illinois placed by hydraulic dredge.

The general contractor on the project was Trompeter Construction Co., Peru, Ill., sand drains were placed by Arcole Midwest Corp., Skokie, Ill., and dredging operations were sublet to LaCrosse Dredging Corp., Chicago, Ill.

Remove Unsuitable Material

Just about everything from trees and muck to automobile bodies was among the unsuitable materials removed down to an elevation approximately 4 feet below normal river level. Giant cottonwoods which had undoubtedly stood since before the white man settled this area fell before the clearing crews with their McCulloch chain saws. In all, 35 to 40 acres of timber and brush land were cleared. Caterpillar D8 tractors with dozers took the smaller trees and brush, piling the trimmings where they could be burned.

In the area which had once been a city dump, approximately 125,000 cubic yards of unsuitable material was removed. This material consisted largely of ashes mixed with just enough old automobile bodies and frames and other larger pieces to make excavation difficult. Dump materials and muck were removed



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Twenty-four hours to complete the job . . . yet stop work at 3:30 P.M. each day with surface ready for use . . . that's the challenge accepted by Texas Bitulithic Co. of Dallas, Texas.

The contract, calling for speed and dependability, involved reworking the base and finish of a 45,000 square yard parking lot for Chance Vought Aircraft at Grand Prairie, Texas. The job was completed within the time allotted, with all asphalt shot each day covered at 3:30 P.M. for use by the afternoon shift. So smooth was the shooting and so continuous the operation that two spreader boxes were kept busy constantly following the distributor!

The "Black-Topper" shown has been in operation for 2½ years with practically no maintenance. Operators point to Etnyre's wider range of operating pressures; easy, clean, positive shutoff; full delivery to the ends of the bar—no rich or lean streaks.

As little as .04 can be shot with this unit—proved on another job of shooting a 3′ middle strip ½ mile long on a busy Dallas boulevard. Spattering of curb, passing traffic, and finished paving was avoided by using reduced pressure. You can have all the advantages of operating a "Black-Topper"—see your dealer or write E. D. Etnyre & Co., Oregon, Illinois.

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Heavy river traffic frequently interrupted dredging operations. Here, a tender swings the discharge line back into place with the aid of the derrick barge.

A section of the discharge line, which was made up of 18-inch Naylor pipe, is lifted into place by an International TD-14 tractor with LeTourneau crane hoist.

down to water level by a fleet of tractor-drawn scrapers consisting of 2 Caterpillar D8 tractors and 2 Allis-Chalmers HD-14 tractors pulling LeTourneau and Gar Wood scrapers.

Below water level, the excavation became a job for 3 Northwest draglines: a Model 80D with 2½-yard Page bucket, a Model 104 using a 1¼-yard Page bucket, and a Model 25 with a ¾-yard Page bucket. Some of the material was cast 3 times in order to clear the base area which was 250 feet wide most of the way. At some points, the excavation depth reached 18½ feet.

Installing Sand Drains

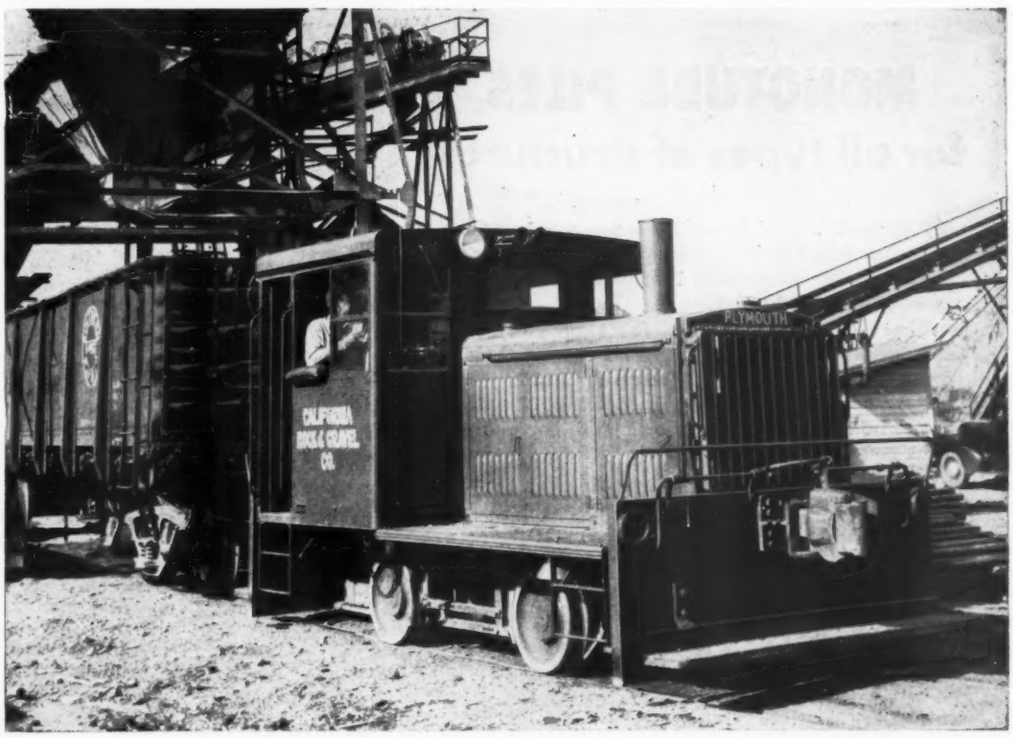
Sand was dredged into the excavated area to build a working platform about a foot above water level over the entire area. Sand drains were then installed through the working platform and on through the muck which varied from about 20 to 47 feet in depth. Drains were spaced 18 feet apart in transverse rows, with the rows spaced 12 feet apart along the alignment. Staggering the rows gave a net spacing of 15 feet between drains in all directions.

Placing the sand drains required the use of a special piece of equipment which has rarely been used. The rig consists of a specially constructed set of McKiernan-Terry stationary leads 75 feet long mounted on a Bucyrus-Erie 51-B crane.

A steel tube, measuring 22 inches in diameter and 47 feet long with ¾-inch wall thickness, was driven in these leads by an 8-ton McKiernan-Terry steam hammer. As the tube was driven, it was filled with sand. A skip which rides on a track on the leads discharged the sand into a hopper at the top of the tube. At the ground level, the skip was loaded by an Allis-Chalmers HD9 tractor with Tracto-Shovel.

When the tube had been driven through the muck and filled with sand, a gate at the top of the tube was closed and air pressure supplied by an Ingersoll-Rand 500 cfm compressor forced the sand down the tube. Using a four-part line, the crane then pulled the tube out, leaving the column of sand in place. Heavy timber mats, handled by a Caterpillar D7 tractor with a job-

(Continued on next page)



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*Torqomotive Drive: Plymouth transmission with hydraulic torque-converter.

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(Continued from preceding page)
built boom, were needed to support the heavy rig on the sand platform.

Gages Record Pressure

To measure the effectiveness of the drains, pore water gages were installed at various elevations in the subsoil at intervals of about 300 feet along the centerline. Each gage consisted of a 1½-inch wellpoint set into the silt subsoil and connected to a ½-inch plastic tube which was carried up above the surface as the fill was built. The pressure of the fill on the subsoil forced water up through the tubes. When the subsoil water was released into the sand drains, this pressure was relieved, indicating the effectiveness of the drains.

These pore water gages, while relatively simple in operation, were not simple to install. Pipe casings, 2½ inches in diameter, were driven through the working platform of sand and into the subsoil to desired depths. The casings were driven by a job-made drop hammer, which was guided by a tube fitting over the casing, and was attached to the Northwest Model 104 crane.

A ¾-inch jet of water supplied at 110 pounds pressure by a Novo pump then jetted out the muck from inside the pipe, continuing the hole 5 feet below the bottom of the casing. The wellpoint was then lowered into the hole below the casing and the hole backfilled with sand to fill the portion below the casing and part of the casing.

Sealing off the surface water from the wellpoint was the next step. When the casing was driven, the bottom 10-foot section was attached with a slip coupling so that it would be left in the ground when the casing was withdrawn. Within this 10-foot section, the seal was placed to exclude surface water from the wellpoint. This seal consisted of 6 layers of bentonite Volclay, each layer 3 inches in depth, which were carefully compacted inside the casing.

Volclay in the form of small balls was dropped into the casing around the plastic tube which led from the surface to the wellpoint. When the proper amount of material for one lift of the seal had been placed, a Masonite ring was slipped over the plastic tube between the tube and the pipe. A special tamper, 3 feet long, 2¼ inches in diameter, and having a 1 1/16-inch hole to fit over the plastic tube was then fitted inside the casing and raised and dropped by hand to compact the seal. After this process was repeated six times, the upper portion of the casing was withdrawn, leaving the wellpoint in the subsoil connected to the surface by the plastic tube.

The pore water gages were installed in groups of three, spaced 5 feet apart in a triangular pattern and at different depths in the subsoil. Groups were spaced about 300 feet apart along the centerline of the roadway. Daily gage readings provided a continuous picture of the effectiveness of the sand drain system as the hydraulic fill was placed.

Platforms Measure Settlement

To measure the settlement of the subsoil and thus determine the actual amount of fill placed, a series of settling platforms was installed on the sand base. These platforms were 4 feet square and constructed of double 1-inch lumber. They were laid flat on the sand. A 2½-inch pipe flange was bolted to the platform, and pipe was added in 4-foot lengths as the fill progressed. By carefully checking the elevations of the top of the pipes, the amount of subsoil settlement was determined.

To keep the platforms from tilting or shifting, Trompeter drove a 4 x 4 8-foot-long timber on each side of the platform and cross-braced between the timbers with 2 x 6 planks. An 85-pound Thor pneumatic hammer with air supplied by a Chicago Pneumatic 160 compressor drove the timbers.

Dredging Operations

Fill was dredged from the bottom of the Illinois River under the supervision of the Corps of Engineers. The specified borrow area extended 500 feet from both sides of the bridge and down to a depth of 35 feet. The average length of discharge line from the dredge to the fill was about 4,000 feet.

For this part of the work, La-Crosse Dredging Corp. brought in the 18-inch hydraulic dredge James Wilkinson to do the actual dredging

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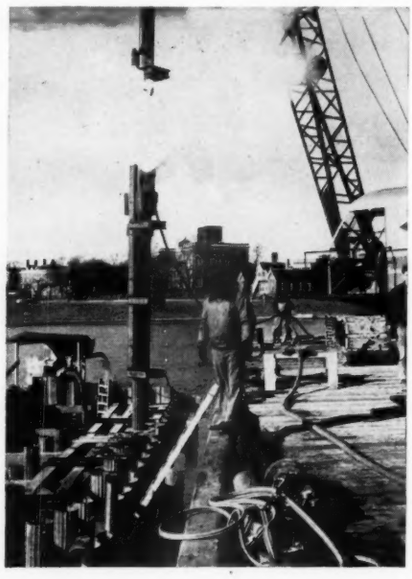

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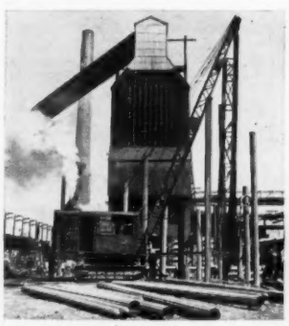

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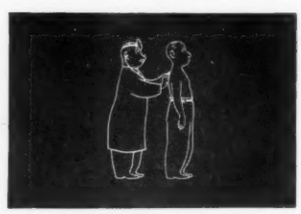

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American Cancer Society

and the 15-inch dredge Engler to serve as booster on the long discharge line. Three tugs, fuel barges, derrick barges, and other auxiliary craft accompanied the dredges.

The James Wilkinson, designed by Jean Allen, Chicago, Ill., and built in the St. Louis Shipyard in 1937, is an 18-inch hydraulic dredge with 55-foot ladder and 6-foot open cutterhead. A 6-cylinder Busch Sulzer 450-horsepower diesel engine drives a generator to supply electric power. Standby and auxiliary power, when needed, is provided by a Caterpillar D13000 diesel generator set. An 8-cylinder Busch Sulzer diesel which develops 1,000 horsepower is direct-connected to the big pump which provides a discharge pressure of 90 to 100 pounds.

A 200-hp Electro-Dynamic motor turns the cutter at about 60 rpm through a 7½-inch chrome-nickel-steel shaft which turns on Goodrich, water-lubricated, cutless rubber bearings. The 22-inch intake line is mounted on the ladder below the cutter shaft. Two 60-foot-long spuds have a cross section 2 x 2 feet in the shape of an H-beam. They are pointed on the bottom and weigh 14 tons each.

The hull of the James Wilkinson measures 35 by 130 feet and is 9 feet deep with a draft of 6 feet. She is rated at 640 gross tons. In the hull are fuel bunkers with a capacity of 18,000 gallons. Equipment includes a cold weather heating system utilizing electric and bottled-gas heaters, a filtered refrigerating unit for producing drinking water, a drinking water storage system which automatically keeps 105 gallons of water at 50 degrees, shower rooms, office and tool rooms are among the many other features.

Two 5,500-pound LST-type anchors secure the 1⅛-inch swing cables. Winches which operate swing, ladder, and spud cables are operated by hydraulic controls from the pilothouse. Electric power is distributed through a switchboard.

The Engler, which is equipped to operate as a 15-inch cutter-type dredge, has an 800 horsepower air-injection-type Busch Sulzer engine which drives a 2,300-volt Allis-Chalmers generator. A 600-horsepower Allis-Chalmers electric motor drives the pump which was used as a booster on this project.

This dredge was anchored near shore at a point where the discharge line left the river and started overland to the fill area. The James Wilkinson ranged over the borrow area and was attached to the Engler by the floating pipeline. Pontoons which carried the 40 and 80-foot sections of 18-inch Naylor pipe consisted of steel floats 5½ feet in diameter and 25 feet long, carrying the pipe and a walkway. Ball and socket joints made by Mobile Pulley & Machine Co., Mobile, Ala., provided flexibility in the floating line.

Relatively heavy river traffic, consisting primarily of barge tows, frequently made it necessary to break the discharge line while the dredge was working on the south side of the channel opposite the fill area. The line was disconnected on the dredge side of the river and the pipe swung downstream until the barge had passed; then one of the tenders, assisted by the hoist on a derrick barge, swung the pipe back into place. The complete operation usually required no more than 12 to 15 minutes of down time.

On shore, the discharge end of the pipe was supported on timber A-frames at the approximate elevation of the lift being placed. A LeTourneau 15-ton crane, operated by an International TD-14 tractor with Heil cable attachment, picked up the pipe sections and held them in place while the connection was made and the A-frame attached. Two dozer-equipped Caterpillar tractors, a D6 and a D8, shaped the fill as it was placed.

Dredging operations continued on a 24-hour, 7-day basis. Six men manned the dredge per shift, while nine additional men were required for booster and shore operations.

Build Detour

After the first lift of sand had been placed for a working platform and the sand drains installed, the remainder of the fill was placed in 10-foot lifts. With the fill at the river bridge built up sufficiently, a detour was constructed to carry the highway traffic along the edge of the project.

Surfacing for the detour consisted

(Concluded on next page)

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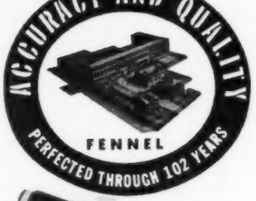

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of a stabilized gravel lift compacted with pneumatic-tire rollers. A prime coat of MC cutback asphalt applied by an Etnyre 2,000-gallon distributor was followed by 2 cover coats of MC asphalt and rock chips. A fourth application of MC and chips sealed the surface. The ⅝-inch chips in the cover coats and the ⅜-inch chips for the seal coat were applied with a Flink pull-behind spreader.

This by-pass road serves not only as a detour while the new highway is being constructed, but also as a permanent access road for adjacent agricultural land. Permanent surfacing of the new road was not included in Trompeter's contract. That part of the job will be done under a separate contract this year.

Personnel

The project was constructed under the supervision of District 3 of the Illinois Department of Public Works and Buildings, Division of Highways. E. R. Knight is acting chief highway engineer and John Grayhack, Jr., district engineer. Richard Gerling was district construction engineer, and Philip Faletto was resident engineer in direct supervision of the work.

Superintendent for Trompeter Construction Co. was Harry Kistler. Dredging operations were supervised by Lloyd Nelson, superintendent for LaCrosse Dredging Corp., and the chief engineer of the dredge James Wilkinson was C. P. Pillars. Malcolm Condie supervised the placing of the sand drains for Arcole Midwest Corp. THE END

The hydraulic Flex-Plane concrete finisher on its second pass over a harsh mix.

Hydraulic Concrete Finish Featu

■ A finishing machine with hydraulically operated screeds has been placed on the market by the Flexible Road Joint Machine Co., Warren, Ohio. The manufacturer states that because of design advantages over mechanical machines with rotary screed drives, the new hydraulic Flex-Plane finisher produces a better quality of finished concrete at a faster rate.

The hydraulic pistons that actuate the reciprocating screeds operate in a horizontal plane so that the screeds are in contact with the concrete throughout the complete stroke cycle. With the piston drive, there is also no slowing of the screed traverse and, therefore, no screed drag.

It is reported that on a number of test jobs, the resulting concrete finish produced by the Flex-Plane machine alone was so true that there was no need for a bullfloat. On every test job, the hand finishers worked close behind the machine because of the easy work left for them. When working on superelevated curves, the hydraulic screeds held the concrete at the high form.

The speeds at which this machine operates are among the factors contributing to the improved quality of the finish. The 12-inch-wide hydraulic screeds have an infinite range of working speeds from zero to 100 strokes per minute. The front and rear screeds operate independently and each may be controlled separately to conform to job conditions. This means an infinite number of combinations of travel and screed speeds is available to the operator.

Powered by a 32-hp gas engine, the hydraulic finisher can work into the concrete as fast as 24 fpm. It can back down the forms or go forward without working the concrete at the rate of 220 fpm. Further flexibility comes from the fact that working and travel speeds are infinitely adjustable and not limited to a few predetermined settings.

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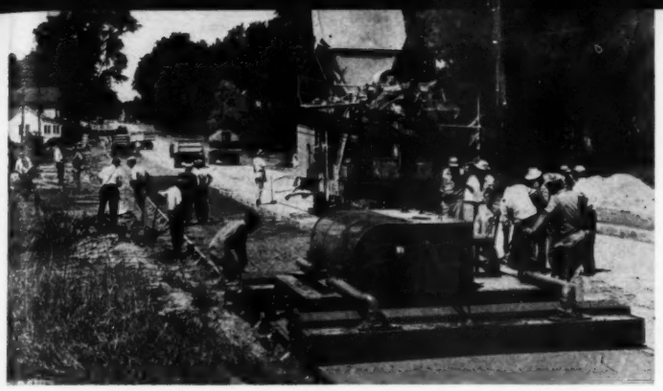

A 10 to 15-foot Flex-Plane hydraulic finishing machine works on a state highway job in Michigan without the aid of any other piece of mechanical finishing equipment.

...Features Speed and Portability

The finisher is manufactured in two standard sizes: one for half-width construction, adjustable from 10 to 15 feet, and a full-width model, adjustable from 20 to 25 feet. The frame telescopes in increments of three inches. With the track wheels mounted to the outside of the frame, there is no frame overhang even at the narrowest widths.

Built-in provisions for moving from job to job are available optionally. The finisher has been designed with retractable pneumatic tires, a built-in towing tongue, and a raising and lowering hydraulic jack at the towing end of the machine. The screeds are raised and nested for travel to give the unit an over-all width of less than 8 feet. The portability feature saves both setup and moving time, particularly since the screeds need never be removed.

All hydraulic controls—for speed; forward and reverse travel; screed drives; and raising and lowering of the transportation wheels, trailer tongue, and both screeds—are centrally located and panel-mounted for easier operation.

The Flex-Plane was tested on 15 different jobs. These jobs provided all types of in-the-field conditions ranging from city street work to state highway work, from half-width work to full-width 24-foot work. The tests included conditions where the machine worked entirely by itself on a ready-mixed pour. Other jobs were high-speed operations employing pairs of dual-drum pavers, spreaders, finishing machines, and mechanical bullfloats. Superelevated curves, inclines and declines, transitions in width from 0 to 12 feet, and transitions in crown from flat to 3 inches were all successfully handled by the test machines.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 752.

Engine Starting Fluid

■ A quick-priming fuel for starting diesel and gasoline engines is manufactured by the Spray Starting Fluid Co., Box 584, Camden 1, N. J. Designed for use on heavy equipment, trucks, and tractors on the road and in the field, Spray starting fluid is applied directly into the air-stream of balky engines. It is said to produce instant starts under extremely cold and damp conditions.

The fluid consists of a highly volatile base, readily ignited by compression in the cylinders of the engine. Several other ingredients are present to provide cylinder lubrication, to minimize corrosion and dilution of lubricating oil by fuel, and to prevent depletion of batteries or compressed air. The fluid is sold through regular automotive and construction equipment distributors and dealers.

For further information write to the company, or use the Request Card at page 18. Circle No. 753.

Service-Tool Manual

■ A service-tool guide for all GM gasoline and diesel-powered trucks has been released by the Kent-Moore Organization, Inc., 5-105 General Motors Bldg., Detroit 2, Mich.

Sections of the booklet cover front axle, rear axle, cab and body, brakes, clutch, cooling, electrical maintenance, gas and diesel engines, fuel system, spring suspension, and steering.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 703.

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You want to reduce your material transport costs? You can do it easily with Sterling Wheelbarrows. They are engineered and built for the tough jobs. All steel . . . all welded . . . no rivets . . . barrows so ruggedly constructed, they seem to last forever. The unusually long service life of Sterling Wheelbarrows protects your initial investment. And maintenance costs are almost nil. Compared to other barrows, Sterlings actually cost less per year. Write for catalog.

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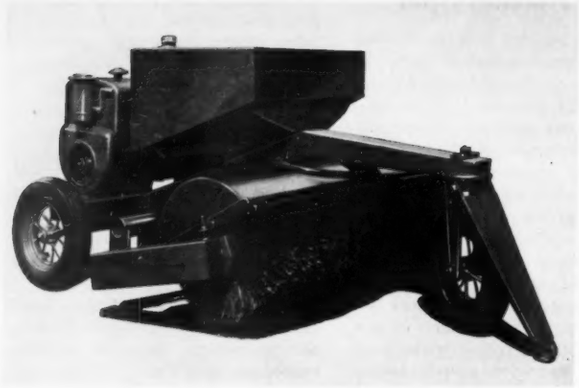


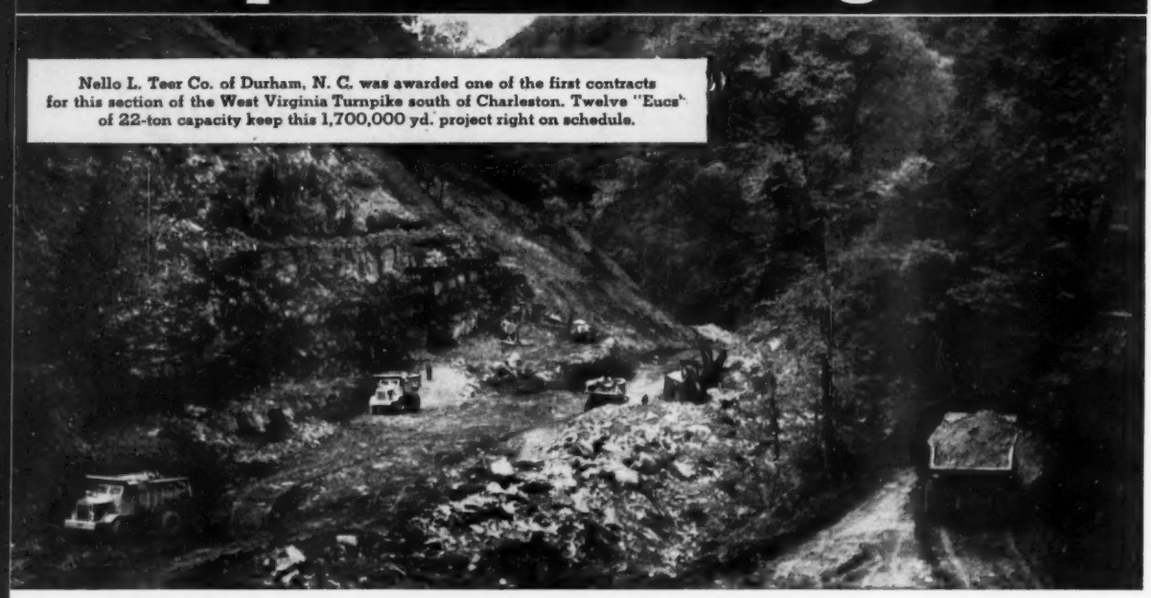
This road broom has a 150-gallon gravity-operated sprinkler tank, and is used in either construction or maintenance operations. It employs the latest type of screw lift. For further information write to the Standard Steel Works, North Kansas City 16, Mo., or use the Request Card at page 18. Circle No. 778.

Booklet on Concrete Piles

■ Concrete piles and caissons are illustrated in literature from the Western Foundation Corp., 2 Park Ave., New York 16, N. Y. The booklet reports that the company offers seven types of cast-in-place concrete piles and has driven every accepted type of pile. Among services offered by the company are pile driving, engineering consultation, exploration, and pile test driving and load tests.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 709.

191 "Eucs" carving out a Turnpike in West Virginia



Nello L. Teer Co. of Durham, N. C. was awarded one of the first contracts for this section of the West Virginia Turnpike south of Charleston. Twelve "Eucs" of 22-ton capacity keep this 1,700,000 yd. project right on schedule.

BUILDING the 88-mile two-lane West Virginia Turnpike is a big, mighty tough job . . . over 25 million cubic yards of excavation, mostly rock. Some of the contract sections will run up to 600,000 cu. yds. of excavation per mile due to the rugged terrain which requires deep cuts and fills as high as 120 feet.

The contractors on this rush job—scheduled for completion June 1, 1954—have been almost unanimous in their selection of Euclid equipment for this heavy grading. They know from experience that they can depend on "Eucs" to move more loads per hour at lowest cost . . . they know that "Eucs" have plenty of power to move big loads up steep grades and over the most difficult haul roads . . . and they know, too, that "Eucs" are tops for job availability when it comes to handling tough yardage.

Every day 191 "Eucs" are proving that the choice of these contractors was the right one. Your Euclid Distributor will be glad to show you why "Eucs" are your best bet for more production and more profit.

◀ On this section "Eucs" are loaded with heavy rock and shale by shovels of 2½ yd. capacity.

It takes plenty of power to haul 22-ton loads on grades that exceed 20% on many of these jobs! ▶

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COLORADO—Colorado Builders' Supply Co., 1300 West Evans Ave., Denver.

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NORTH CAROLINA—North Carolina Equipment Co., P. O. Box 880, Greenville; P. O. Box 1200, Charlotte; Sweetwater Creek Rd., Asheville; P. O. Box 128, Guilford; P. O. Box 658, Wilmington. Hampton Roads Tractor & Equipment Co., Norfolk, Virginia.

NORTH DAKOTA—Northwestern Equip. Co., Box 183, Fargo. Northwestern Equip. Co. of Minot, Box 335, Minot.

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TEXAS—The Euclid Road Machinery Co., 1807 Levee St., Dallas 2. Lively Equipment Co., P. O. Box 1438, El Paso.

UTAH—Foulger Equipment Co., 1361 So. 2nd West, Salt Lake City 8.

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VIRGINIA—Hampton Roads Tractor & Equipment Co., W. 36th and Killam Ave., Norfolk. Rish Equipment Co., 1601 Chamberlayne Ave., Richmond 16; 405 Center Ave. N.W., Roanoke 7.

WASHINGTON—Western Tractor & Equipment Co., 2230 First Ave., S., Seattle 4; 980 Pringle St., Chehalis; Rt. 12, Box 94, Yakima. Intermountain Equipment Co., E. 811 Sprague Ave., Spokane 8. P. L. Crooks & Co., Portland, Oregon.

WEST VIRGINIA—Atlas Equipment Corp., Pittsburgh. Rish Equipment Co., Kanawha Blvd., Charleston 22; East on U.S. 50, Clarksburg; P.O. Box 269, Bluefield. L. B. Smith, Inc., Philadelphia, Penna.

WISCONSIN—Cunningham-Ortmayer Company, Milwaukee 46, Eau Claire and Green Bay.

WYOMING—Colorado Builders' Supply Co., Denver. Foulger Equipment Co., Salt Lake City 8, Utah.

The Everett trencher for Ford and Ferguson tractors.

Bucket-Type Trencher Is Tractor Mounted

■ A bucket-type trencher that mounts on the Ford and Ferguson tractors is made by the Earth Equipment Corp., 2036 Sacramento St., Los Angeles 21, Calif. The Everett trencher cuts up to 42 inches deep in a width of 12 to 18 inches. It is recommended for drainage and irrigation ditching; foundation work; and water, gas, oil, and power-line trenching.

Operating from the power takeoff of the tractor, the unit is raised and lowered by a built-in hydraulic system. A V-belt safety slip feature is built into the drive of the trencher to stop the bucket line when obstructions such as pipelines, heavy roots, large rocks, and foundations are encountered. Other features are a rock guard, a single-wheel design said to give faster penetration, and easy accessibility of controls.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 787.

Data on Foundation Borer

■ New literature on a foundation borer attachment for the Gar Wood 75 Series excavator has been announced by the Findlay Division of Gar Wood Industries, Inc., Findlay, Ohio. The foundation borer is recommended by the manufacturer for making an unreinforced type of foundation footing.

This machine, with a revolving cylindrical bucket, bores a round hole of 44, 36, or 25 inches in diameter. The bucket can be raised and swung away from the hole to empty. Vanes on the side of the bucket can be opened at any step to bell out the hole.

It is pointed out that, because the foundation borer makes a clean round hole without disturbing the surrounding ground, cement for the footing can be chuted into the hole immediately after excavation. This eliminates hand excavation, and the need for additional cranes and operators, carpenters, and steel workers. The concrete, lumber and steel required for reinforced footings are also saved. In addition, no backfilling is necessary.

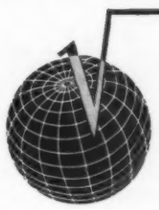
To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 715.

Carboloy to Expand

An expansion program of over $1,000,000, to be completed late in 1954, was announced by the Carboloy Department of the General Electric Co., Detroit 32, Mich. The program includes the addition of 36,000 square feet of floor space to the department's metals building, plus new engineering and manufacturing equipment.

The expansion will allow the department to rearrange its tool-room production, engineering, and equipment-development facilities. Construction on the expansion is slated to get under way this month.

What Is Your Subsurface Problem?



GEO-RESEARCH, a division of The Institute of Industrial Research, obtains for you rapid, time-saving subsurface information that is dependable. . . . With our modern, refraction seismographic service, together with standard-type boring methods, we solve difficult subsurface problems — anywhere.

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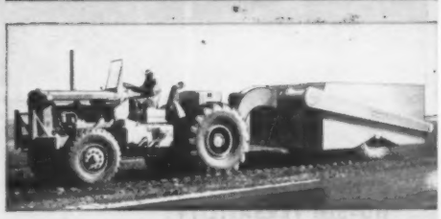
NEW COMPACTION RECORDS SET BY SOUTHWEST COMPACTION ROLLER

Cat DW21 Tractor equipped with 50-75 ton Southwest Compaction Roller

with Caterpillar Diesel Tractors



USING FEWER PASSES over heavier lifts the Southwest Compaction Roller is setting new records on every job. *On the bigger jobs* the combination of the Southwest Roller and Cat DW21 keeps pace with 24-hour job schedules and the largest earth moving equipment. With the extra flexibility of the exclusive Southwest independently oscillating weight-box units, you get uniform compaction weight on each tire regardless of ground contour. And there is no bridging, no shifting of load.

To suit varying job requirements the hauling yoke is sectionalized for adding or subtracting weight boxes . . . the yoke is also flanged to permit changing the draft beam assembly . . . and the weight boxes can be filled with any material to obtain desired total weight. Sizes and capacities range from 10 to 100 tons. Write for compaction data covering various types of soil and for illustrated literature.

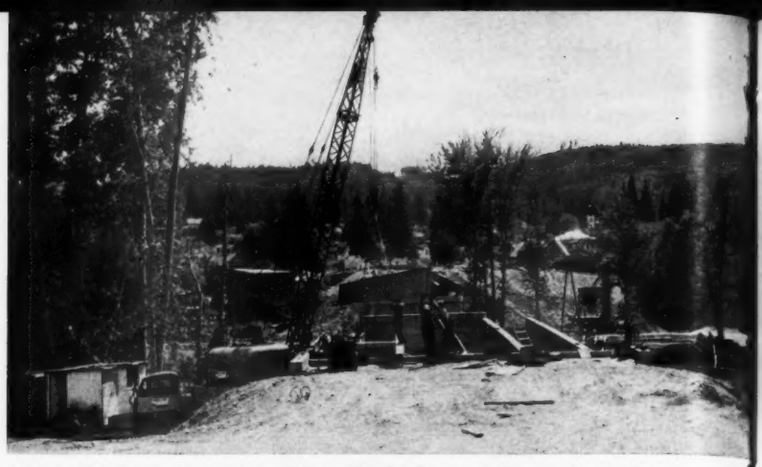
CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA

Fir Piles Support Piers for Bridge Foundation

Steel and reinforced-concrete span is part of highway project that includes overpass embankment



A Lorain Moto-Crane places a 9-ton girder section for the new bridge spanning the St. Joe River between Cour D' Alene and St. Maries in Idaho. *Ray Day Photos*

WITH THE COMPLETION of a half mile of improvements on U. S. 95, motorists no longer will have to travel along a twisting course with 90-degree turns across obsolete bridges and through traffic bottlenecks when driving across the St. Joe River into St. Maries, Idaho. Today, work on a railroad overpass, a steel and concrete girder bridge over the river, and new approach embankment work have combined to make the trip from Coeur d'Alene south to St. Maries via the scenic east shore of Coeur d'Alene Lake straight and safe.

Hansen & Parr Construction Co., Spokane, Wash., doing the job for the Idaho State Department of Highways under a $585,047 contract, started work late in 1952, and completed it in the latter part of 1953.

From the beginning, tricky foundation problems hampered bridge investigators, designers, and builders. In one instance, ironworkers cut 4 inches from structural steel girders on the river bridge to compensate for movement in one of the completed abutments. This movement, engineers believe, was probably due to subsidence of mud in the waterlogged bottom of the St. Joe River.

Loading Design

The bridge and the railroad overpass structures are designed for H15 S12-1944 loading standards. Both structures have a 26-foot curb-to-curb finished roadway and consist of a reinforced-concrete deck set on structural steel girders and reinforced-concrete piers.

The river bridge measures 410.5 feet from end to end and consists of four center piers and two abutments. Span lengths, measured center to center of bearing, are 77, 80, 94, 80, and 77 feet. Each span is carried on five 36-inch-deep steel I-beam girders, joined by hinged toggle joints so that some compensation will be provided for bridge movement due to traffic and foundation conditions.

The heaviest structural lift involved comes in the 60-foot girders, each of which weighs 8 tons, near the north end of the river bridge.

The railroad overcrossing consists of a 112-foot 2-inch-long cantilever-type girder overpass which crosses the Chicago, Milwaukee, St. Paul, & Pacific Railroad. This structure has reinforced-concrete retaining walls at the ends and two concrete center piers. Loading characteristics and general design data are the same as those for the river bridge.

Stockpiles coal, sand, aggregate. Has traction and flotation to work right up on the pile.

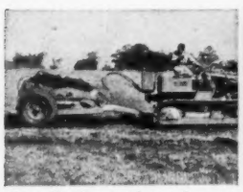
Excavates, fills, levels. Compact — for work in limited areas.

Backfills ditches, packs and levels ground with 16,200 lb. weight.

Cleans up rubble with one-cu. yd. tractor-width bucket.

Lifts material where needed. Saves manpower and need for other equipment.

Does sanitary fill work — digs, fills, covers, levels.



Does drawbar work scraping . . . hauling.

Landscapes, grades or slopes lawn areas around building projects.

ALLIS-CHALMERS HD-5G

Always Busy...

because it does so many jobs so well!

Busy equipment is profitable equipment. And thousands of owners are learning every day the year around that there's no more profitable machine on their jobs than the one-yard Allis-Chalmers HD-5G Tractor Shovel.

Loads sand, dirt, snow — any material to dumping height of 9 ft., ¼ in.

TEN QUICK-CHANGE ATTACHMENTS ADD TO HD-5G VERSATILITY

Bulldozer	Trench Hoe
Narrow Bucket	Lift Fork
Rock Bucket	Tine Fork
Crane Hook	Rock Fork
Light Material Bucket	Ripper

Larger size Allis-Chalmers tractors with shovels and other quick-change attachments offer the same wide utility, the same outstanding performing ability as the popular HD-5G. Choose the one that fits your needs.

1-YD. HD-5G	2-YD. HD-9G	3-YD. HD-15G	4-YD. HD-20G
40.26 drawbar hp.	72 drawbar hp.	109 drawbar hp.	175 net engine hp.
Dumping height*	Dumping height*	Dumping height*	Torque Converter Drive
9 ft., ¼ in.	11 ft., 4 in.	12 ft., 8 in.	Dumping height*
			13 ft., 5 in.

*Height of bucket hinge

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Construction conditions for the two center piers were not easy. There was 28 feet of water at these piers, and beneath the water lay a mass of mud, stiff clay, and unclassified material. It was clearly a job for sheet pile dewatering.

General Superintendent Grant Connor, who was in charge of the work, brought in Bethlehem AP-3-type steel sheeting and began to build the cofferdams one at a time. Pile-driving equipment consisted of a 75-hp horizontal steam boiler, a Vulcan No. 2 pile hammer, and a Lorain Moto-Crane carrying a set of hanging leads from its 60-foot boom. A Vulcan pile extractor was also on hand to assist in pulling the sheeting after the work on a pier had been finished.

Falsework

A timber and wood pile falsework was built along the bridge line, permitting crane equipment to work with speed and safety in driving and extracting piling. This falsework consisted of untreated wood pile bents, driven to a bearing of about 15 tons per pile. There were from 4 to 6 piles in each bent. With 8 x 24-inch Douglas fir timbers bolted to the top of each bent and bents covered with heavy planking, a stable work platform was created.

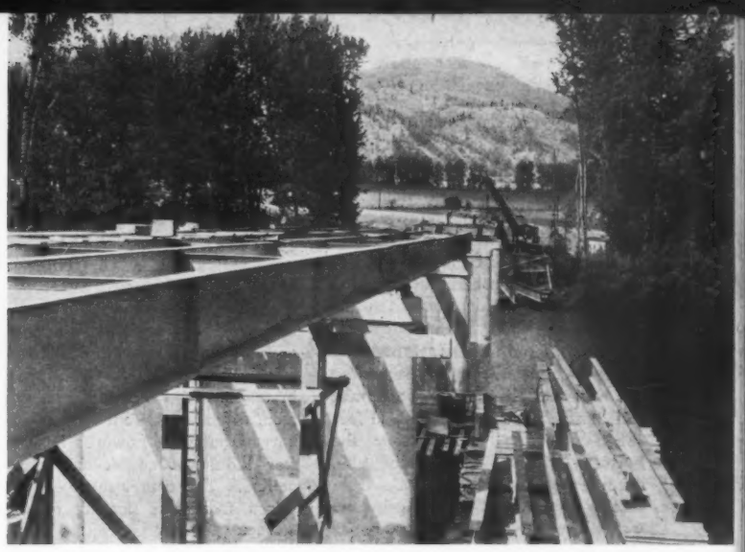
The steel sheet piles were driven so that a hole 44 feet deep could be opened at each pier. Fifty-five-foot sheet piles were used on two of the piers to attain this, while 30-foot sections were long enough to build one shallow pier. It was possible to build one pier foundation without a cofferdam while the river was at a low stage.

The sheet piles went into the mud easily. When they reached grade, a double I-beam framework of 18-inch members was laid in ring form to stiffen the cell against any movement.

Special Douglas fir piles 90 feet long were imported to carry each pier's foundation load. Plans called for 84 untreated-wood pile units under each pier. The piles were driven initially to water level. After the sheet pile cell was constructed and about 15 feet of muck bailed out by a P&H crawler crane and an Owens clamshell bucket, the piles

(Concluded on next page)

The Lorain crane places a diaphragm section between two girders for the bridge superstructure.



Steel erection is under way on the river bridge, part of a half-mile improvement project on U. S. 95.

"This suggestion solved their problem... ...Saved them Money, too!"

The public works department of a large Southern county had run into a serious problem with their road building equipment.

Sinclair Representative J. E. Gilmer reports, "The oil being used was high-priced but certainly *not* up to the requirements of this type of equipment. Bearing wear was high and carbon and sludge were found in all of the engines. There was definite need of an oil with better oxidation stability under extreme operating temperatures and heavy load conditions.

Mr. Gilmer continues, "I suggested Sinclair SUPER TENOL™, pointing out that this oil contains special additives to clean engines and *keep them free* of carbon and sludge. Moreover, its better oxidation stability helps prevent corrosive wear of bearings and rings.

"The county warden gave SUPER TENOL a test — the results of which proved my suggestion was right. SUPER TENOL gave far better service than the more expensive oil previously used. Of course SUPER TENOL is now used exclusively in all of this county's road building equipment."

SINCLAIR LUBRICANTS

Why not give a Sinclair Lubrication Engineer the chance to help solve *your* lubrication problems. *There's no obligation.* Contact your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

(Continued from preceding page)
were cut off 11 feet above the bottom of the excavation.

The cells were dewatered by an 8-inch Gorman-Rupp pump, and another pump was used to produce jetting water. High-pressure nozzles and hose did much work which formerly called for labor crews. For example, sticky mud hanging underneath bracing rings was blasted loose by water under pressure. Even the bottom of the hole was leveled in this way. Thus, when a concrete water seal was poured under each pier, the holes were clean, dry, and ready for the material. River piers were built in 4 hours. A concrete seal 10 feet thick was first poured over the bottom of the river foundation. After it was cured, a 3-foot concrete footing reinforced with steel rods was placed. The main pour was made, carrying the structure to the bottom level of the cap beam. Then the cap beam was placed and the pier was made ready for the structural steel.

Formwork consisted of prefabricated units, made with plywood facing and 2x4 studs. Since the various piers had similar dimensions, forms were used repeatedly. Most of the forms were made at a central carpenter yard, set up on the north abutment of the river bridge. A DeWalt radial cutoff saw and band saw, along with SkilSaws and other small tools, speeded this part of the work.

After the form panels were built, they were trucked into their locations and set by one of the several cranes on the job. Universal form bolts and tie rods were used to hold internal and external pressures, and Universal form stirrups were used to hold forms tight on curbing pours. Since concrete materials were not available at St. Maries, aggregates and sand were shipped from a commercial plant in Spokane, Wash., to a railroad siding at St. Maries. There they were unloaded by a P&H truck and clam bucket and trucked in to a Binanbatch plant. After being weighed to correct proportion, materials were hauled in batch trucks to the skip of a Mixermobile. There the aggregates were mixed with water and Lehigh sack cement of a low alkali Type II grade. Specifications called for 5 per cent of air entrainment, so both Darex and Protex were used. The concrete was placed directly on low spots by a Gar-Bro 1-yard bottom-dump transfer bucket, handled from the boom of a Lorain crawler crane. On deck pours where the slabs were flat, two Gar-Bro Power-Carts took the fresh concrete to the point of placement. Mall vibrators shook the concrete down.

There are no rock pockets, and very few air bubbles in the concrete work on both bridges, and only a minimum of hand rubbing was necessary. Piers were water cured, and deck slabs were cured by Hunt Process membrane.

Structural Steel Goes In

Structural steel members for the bridges were fabricated by American Bridge Division of U. S. Steel Corp., and shipped by rail from Minneapolis to St. Maries. They were brought directly to the job after being unloaded into a low-bed trailer by a Lorain crawler crane. When possible, they were placed in the structure to eliminate secondary handling but, in order to release trucks, secondary handling was necessary in many cases.

Placing cranes consisted of a P&H crawler and a Lorain Moto-Crane, each of which was equipped with multiple-way blocks, outriggers, and heavy booms. The structural steel, erected from both sides of the river, was placed as far out as the rigs reached. Special timber falsework was used to support one end of the girders on the outriver side. Then the Moto-Crane moved in to place the remaining members from a pair of 48-foot steel pontoon barges that were powered by Chrysler industrial engine-driven propellers. The center members were raised from this floating platform.

Deck pouring started after the structural steel was placed. The forms were conventional wood panels spaced between the I-beam girders and supported on timber shores reaching up from the bottom flange. After being set in tight, they were oiled, reinforcement was placed, and the slabs were poured to complete the structure, except for pedestrian curbs and guardrails.

The approach embankments were built up and compacted by tractor and scraper equipment, and a granular base course and asphalt surfacing were placed in time to tie in with late summer traffic needs.

Personnel

Field men on the project included General Superintendent Grant Connor, in charge for Hansen & Parr, and J. C. Sheeley and R. R. Aleman, resident engineers for the Idaho Department of Highways. The structures, designed under the direction of Walter Albrethsen, chief bridge engineer for the Department of Highways, were approved by the Bureau of Public Works. The job is under the general supervision of Walter Albrethsen, R. M. Parsons, district engineer at Coeur d'Alene, and E. V. Miller, state highway engineer for the Idaho Department of Highways. THE END

Gorman-Rupp Names Two

Two new district representatives have been appointed by The Gorman-Rupp Co., Mansfield, Ohio, manufacturer of engine and motor-powered pumps. William P. Newdome has been named for the Great Lakes region and Robert L. Nicolai, for the northwest division.

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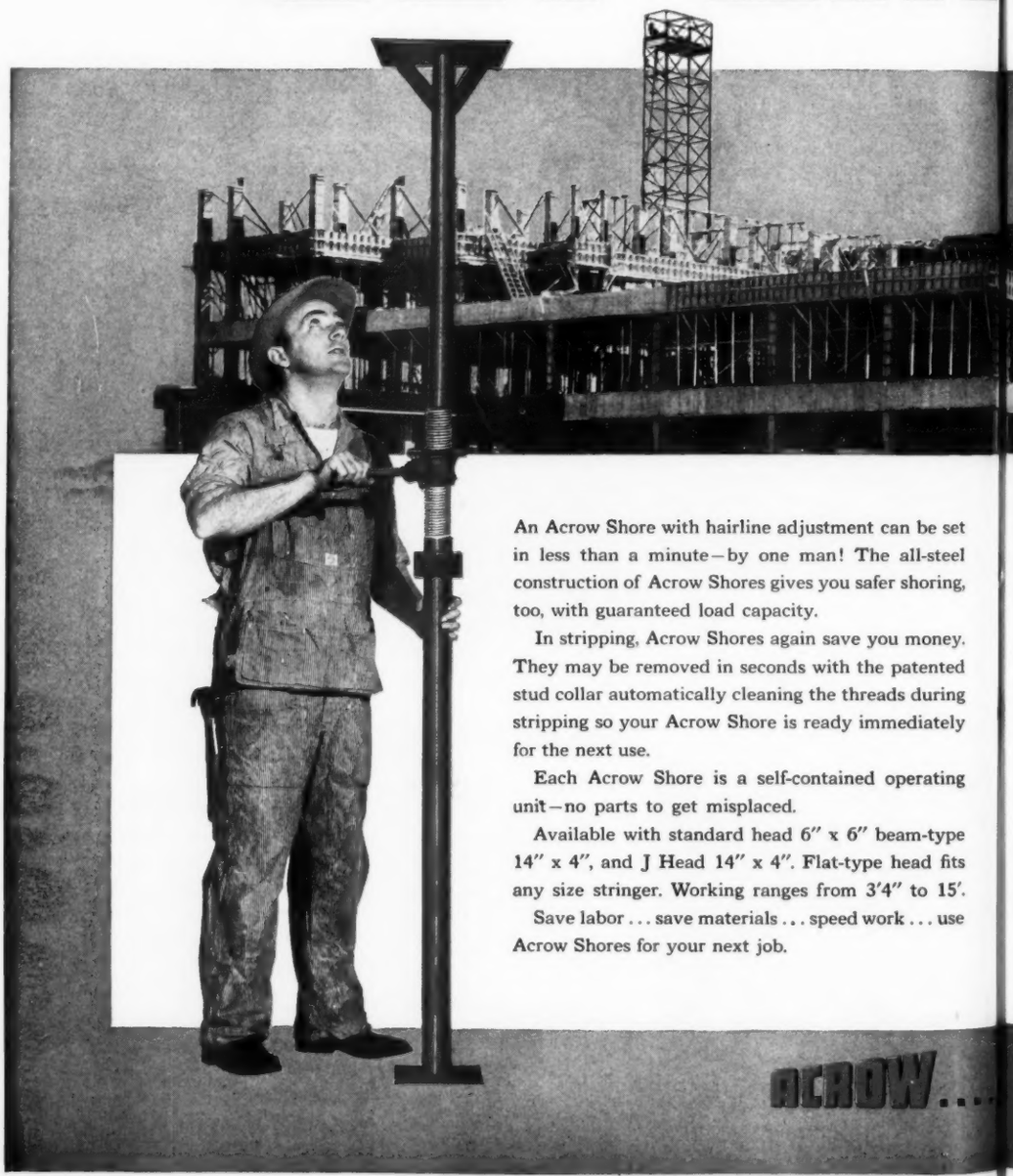

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Truck Line Features Tandem-Axle Units

■ Ford's 1954 line of trucks, powered by five new engines, features the first tandem-axle unit ever built by the company. More than 220 models are offered with gross vehicle weights ranging from 4,000 to 40,000 pounds. Master-guide power steering is now available on the Big Jobs, and there is Fordmatic fully-automatic transmission on all light-duty models. Emphasis has been placed again on cabs designed for driver comfort.

This new T-800 Series tandem-axle truck is the first tandem unit ever built by Ford.

New to the line are the Series T-700 and T-800 tandem-axle trucks with gross combination weights up to 60,000 pounds. The frames, steering, and other components of these units have been newly designed. The T-700 is suitable for a 3½-yard concrete mixer, a medium dump truck body, or an oil tanker. The T-800 is rated to carry a 5½-yard mixer or a large dump body. These trucks are suitable for off-the-road work as well as for traveling over the highway. The double axle brings them within the 18,000-pound highway limit now enforced by 34 states and the 32,000-pound limit on dual axles, in 27 states.

Ford has also added two new cab-forward series to its line, the C-700 and the C-900 Big Jobs. The C-900, with a maximum gross combination weight rating of 55,000 pounds, is made with the largest cab-forward capacity ever offered by the company. All Series C trucks meet the 45-foot over-all length requirement of most states.

Closer coupling has added up to 2 feet of load space while shifting the extra weight off the rear axle and placing it on the front for better balance and maneuverability in traffic. A depopper valve that uses the engine vacuum to stop downhill backfiring at its source is available for these units.

The new truck engines offered range from 223 to 317 cubic inches in displacement and develop from 115 to 170 hp. They are of the short-stroke low-friction design with a new deep-block construction for greater structural rigidity. Pistons travel up to 30 per cent less distance in each revolution, and frictional horsepower waste is said to be cut as much as 33 per cent.

For further information write to the Ford Division, Ford Motor Company, P. O. Box 638, Dearborn, Mich., or use the Request Card that is bound in at page 18. Circle No. 754.

Steel Scaffolding Line

■ A new line of all-steel scaffolding is announced by the Superior Scaffold Co., 5624 Bankfield Ave., Culver City, Calif. The manufacturer states that the new steel scaffold has a lower initial cost and takes fewer man-hours to erect. There are no wing nuts to tighten and no patent clamps to adjust. With built-in work stands at every working level, the scaffolding is adjustable to any height.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 743.

Cement Testing Machine

■ A new 50,000-pound cement testing machine is illustrated in literature from the Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa. Bulletin 4205 describes the evolution of cement testers as changes in the specification requirements for cements have been accumulating for the last several years.

The capacity of the weighing capsule and the frame of the new machine is such that it can be used for loads up to 100,000 pounds. For use at this higher load, the unit may be furnished with a 16-inch Emery precision load dial. This can be connected into the manifold to utilize the extra capacity for tests of 6 x 12-inch concrete cylinders or other specimens whose breaking points exceed the 50,000-pound range on the Tate-Emery null indicator that is standard equipment.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 694.

UP FAST

Memorial Hospital, Dallas, Texas, built by Robert E. McKee, General Contractor, Inc., at approximate cost of $10,000,000. Mr. C. Brown, superintendent, used Acrow Shores on this project.

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ADJUSTABLE STEEL SHORES
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Excavating Contractors Work Together in EGCA

A Tournapull works on the 32,000-cubic-yard dirt-moving job done by EGCA members for the Minneapolis-Honeywell Regulator Co.

FIVE YEARS AGO small dirt contractors in southern California, driven by competition, watched helplessly as their bids were peddled openly. One man was played against the other. Sizable tractor loaders were renting for $6.00 an hour. Nothing was standardized in the way of workmanship. And many more small-scale dirt-movers, owning possibly one or two machines, were pouring into the area to take advantage of a construction bonanza in an all-year climate. To many established earth-moving contractors, it seemed futile to attempt to stay in business. But now the picture has changed dramatically.

Today, earth-moving in southern California is governed by codes and written agreements. Most of the injurious competitive tactics have disappeared. Earth-moving contractors themselves have pressed for higher standards in earthwork and compaction engineering, particularly where sliding hillside areas are involved. Tractor loaders now rent for reasonable figures, and a set of ethical standards has been formed. These standards, unique in the dirt-moving business, are beginning to command nationwide attention.

Credit for all this belongs to the Excavating and Grading Contractors Association, an earth-moving contractor group composed of all the principal dirt contractors in the area. EGCA, working to improve the lot of excavating contractors throughout its area, has mushroomed rapidly. Originally covering only southern California, it is now about to encompass the entire state.

EGCA does not compete with the nationwide contractor's organization, Associated General Contractors of America. Many small earth-moving contractors classed as C-12 operators and belonging to EGCA are not regularly eligible for membership in a contractors' organization.

In practical terms, EGCA is doing something for contractors which they were not able to do alone. One small earth-moving outfit with only a $20,000 annual net business in 1948 now credits membership in EGCA for a 100 per cent increase in volume and profits.

All members are solidly behind their organization. When EGCA needed about $10,000 for its financial reserve early last year, practically 100 per cent of the membership pitched in with men and equipment, took a contract job in the organization's name, and managed it so ef-

NO TIME LOST!
LOADING OR LAYING ITS LOAD

A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR

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The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

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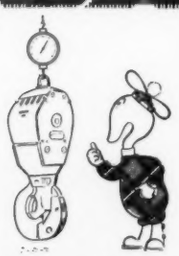

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CUT wire line costs and sheave replacements . . . with flame-hardened, alloy steel sheaves.

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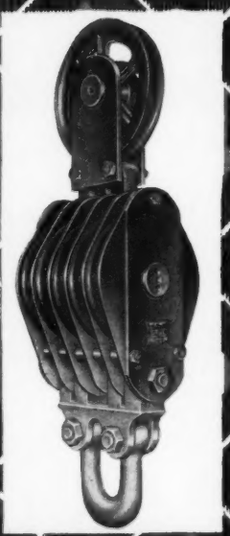

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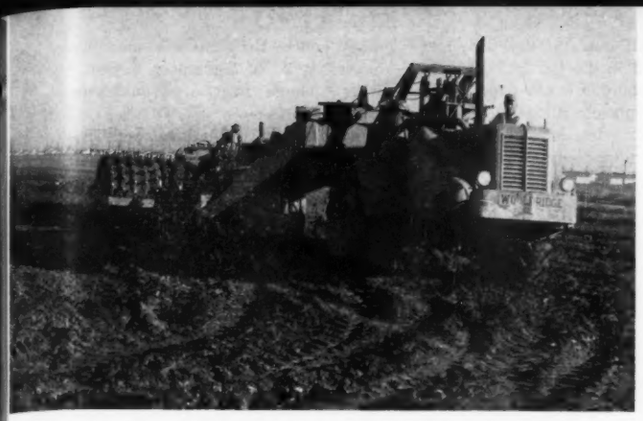

Owned by EGCA member J. A. Thompson & Sons, this Terra-Cobra is push-loaded by an Allis-Chalmers HD-20 tractor and sheepsfoot roller unit as it works on a housing job. *Ray Day Photos*

Another contractor on the Minneapolis-Honeywell job is Tony Piazza, who uses an Allis-Chalmers Tractor shovel to load a GMC truck with debris.

ficiently that the normal 20-day undertaking was finished in less than two days.

The organization is beginning to arouse much favorable comment in other ways. On California's state work, for example, the law requires bids to list the names and addresses of all subcontractors that general contractors propose to use on the job. If subcontractors who have given bids on such work are not listed, the general contractor is sometimes left free to search for even lower subbids after the work has begun. EGCA feels that this practice works against its members, and it urges more attention to this requirement. There has been more than one surprised murmur in a bidding room when EGCA Secretary Lynn Bradner took the floor to pin-point specific cases where listings were omitted.

Membership Good for Business

Membership in EGCA is proving to be good business. If an EGCA contractor takes a job outside his regular territory and runs up against a problem calling for a backhoe, his EGCA Directory will give him at a glance the names, addresses, loca-

(Continued on next page)

Drilling and belling

CAISSON PIER HOLES

Up to 40% has been saved in drilling and belling caisson pier holes with Calweld Earth Drills as compared with old digging methods. Calweld Model 150-A drills holes from 16 to 84 inches in diameter to depths of 200 feet, removing 21.5 cubic feet of earth per pass.

Every operation is completely mechanical which eliminates costly hand labor and danger to workmen. All controls are centered in a single unit to permit efficient operation with a two man crew.

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Built on skid frames to mount on two-ton or larger trucks, Calweld Earth Drills can be quickly moved and set up to handle multiple bores with a minimum of lost drilling time. Specially designed interchangeable buckets speed up boring and earth moving operations in every type of subsurface formation. Belling bucket quickly and safely forms bottom hole enlargement to specified requirements. *Faster caisson hole drilling with Calweld Earth Drills brings foundation costs down in a hurry. Write today for full information.*

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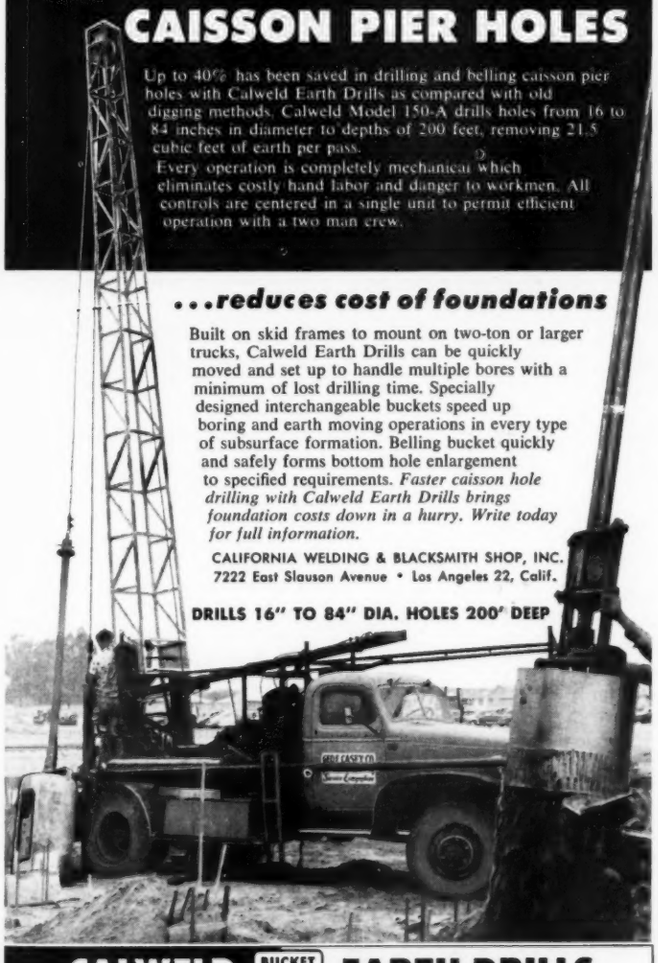

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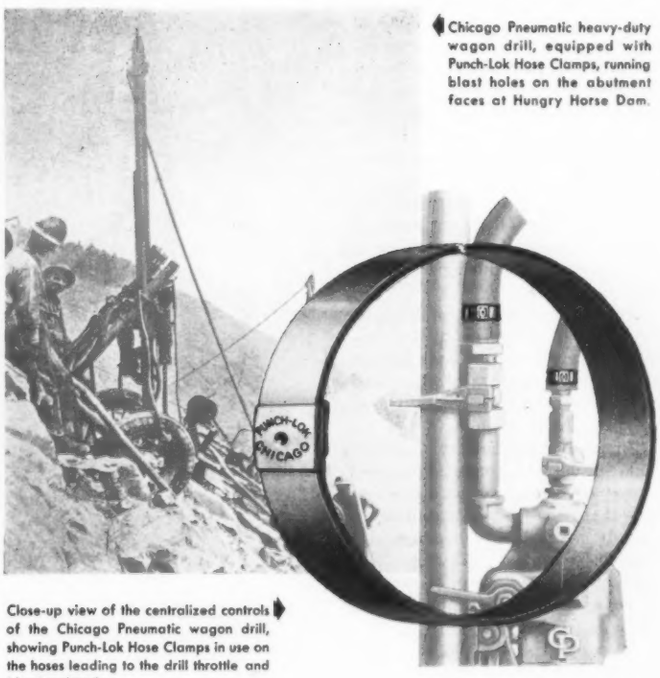

Chicago Pneumatic heavy-duty wagon drill, equipped with Punch-Lok Hose Clamps, running blast holes on the abutment faces at Hungry Horse Dam.

Close-up view of the centralized controls of the Chicago Pneumatic wagon drill, showing Punch-Lok Hose Clamps in use on the hoses leading to the drill throttle and blowing throttle.

With Punch-Lok Hose Clamps on the job . . . you're sure of having truly dependable hose connections. Maintenance costs are reduced because of Punch-Lok's trouble-free performance. When hose repairs are needed . . . Punch-Lok again saves you time and money. You'll be amazed to see how quickly and easily Punch-Lok Hose Clamps are applied.

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(Continued from preceding page)
tions, and equipment rosters of members in that vicinity.

Standards of workmanship have been raised in many cases by sharing operators among various contractors. Good motor grader operators, for example, have well known standing. The entire EGCA setup makes for better efficiency in grading. If the organization has done nothing else, it has eliminated the many strained relationships and brought contractors together on a friendly basis. Yet it has not reduced competition or attempted to foster monopolistic earth-moving practices. It has, however, attempted to lower dirt-moving costs and raise over-all profits for contractors. The ways in which this has been done are simple and forthright.

For example, an EGCA contractor digging a basement under a department store can solve his earth-disposal problem by farming the material out to other EGCA members close by who need the dirt as fill. This reduces the length of time needed to complete the job, cuts the length of dirt haul, lowers costs, increases profits, and in cases where arrangements can be worked out in advance, lowers the cost of work to the owner.

The close liaison characteristic of EGCA membership seems to be paying off at the box office. More and more, members are bidding jointly on jobs too big for their individual bonding capacities. This practice requires less equipment investment, spreads risks on tricky jobs, and helps make contractor organizations permanent business entities in their communities by keeping key forces occupied.

In a recent joint-venture job, two members retained their key men and kept the organizational teamwork of both outfits intact during an otherwise slack period.

The best justification for bringing grading and paving contractors together is that given by Jack Prince, president of the organization and head of Westway Excavating Co. of West Los Angeles.

"An excavating contractor," Prince said, "usually has more investment money at stake—even on a building job—than the general contractor. The dirt man's investment in equipment is enormous. Why shouldn't some attention be given to the importance of the dirt subcontractor in the scheme of that job?

"All we're trying to do is to raise the stature of dirt-moving to some point which represents its importance in the over-all scheme of construction."

Formed in 1949

It was this basic philosophy which was behind the formation of EGCA. Back in 1949, a few of the established dirt contractors in the Los Angeles area had become alarmed at the steady decline in equipment prices, along with a more gradual decline of ethics in the trade. Then a group of men including Dick Scott, Jack Prince, Paul Drummond, Ray Westmyer, Whitey Price, and Frank Goplin began to search their minds for a remedy. A small association seemed logical. Its first meeting was held in the tiny field office of Westway Excavating Co. which had only a few chairs available for the early comers. Other men sat on desks, dynamite boxes, or the floor.

From this humble beginning, the movement spread into the city of Los Angeles and to the San Fernando Valley area. At first, the organization had so much urgent business to discuss, meetings were held every two weeks. Its membership undertook a $2,500 community job in Culver City to finance its incorporation late in 1950. At the same time, EGCA employed its first secretary and published its first equipment directory. Up to that time there never had been a similar compilation regarding earth-moving equipment in the Los Angeles area. Advertising more than offset the directory's expense. It was not long before the EGCA Directory became the bible of the dirt-moving industry in Los Angeles County.

The third issue of the Directory was started in the fall of 1952. The first section of the 130-page handbook presents classified information under such detailed headings as suppliers, equipment, parts, repairs, tires, fuel, lubricants, insurance, and bonds. The equipment breakdown includes listings of various types of track-type dozers and loaders, tractors, scrapers, shovels, cranes, motor graders, paving equipment, rollers, trenchers, rippers, compressors, pneumatic tools, trucks, welding equipment, and electric tools. Also included is a listing of miscellaneous equipment.

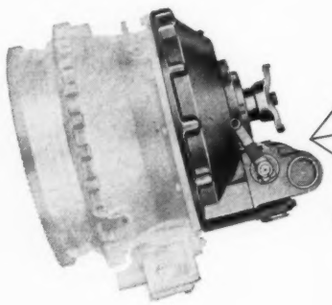
The handbook reflects the wide diversity of membership in the organization. One member's sole equipment fleet consists of a Ford tractor with front-end loader and rear-end drag equipment. At the other end of the scale are such big outfits as J. A. Thompson & Sons, with a huge fleet of Wooldridge Terra Cobras.

Meanwhile, EGCA developed The Trading Post, a weekly organization news sheet carrying information on equipment available, dirt available, and dirt wanted.

In the spring of 1951, Lynn Bradner was employed as secretary, and a membership drive was begun. Later in the year, EGCA formed chapters in San Bernardino and Riverside counties. In December, 1951, the San Diego Chapter was formed, and by the spring of 1952, the association expanded northward as the Tri-County (Ventura, Santa Barbara, and San Luis Obispo) Chapter was opened. At the same time, the Central Valley (Kings, Tulare, Fresno, and Madera) Chapter was

Faster, safer downhill hauling with

New Allison Torqmatic Brake



Speeds job-cycle time—
cuts maintenance costs—no wearing parts
cuts service brake lining wear

ALLISON'S *new* TORQMATIC BRAKE brings faster, safer downhill hauling to heavy-duty trucks. On-the-job tests prove that in many cases drivers can more than *double* present downhill speeds with complete safety. This new dynamic brake speeds job-cycle time for more trips per shift—more pay loads per day.

Proved in Field Tests

This revolutionary new TORQMATIC BRAKE increased round trips 50% per day on year-long tests. Trucks safely came down a 10% grade with a 34-ton load at 12 miles per hour compared to 6 m.p.h. for trucks with friction brakes only. With the TORQMATIC BRAKE, the regular service brake linings lasted from 6 to 8 months —without it they required monthly replacement.

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There are no active braking parts to burn up or wear out in the TORQMATIC BRAKE. Drivers have complete control at all times—can brake continuously even going down the steepest grades with the heaviest loads. Trucks never "run away" from the driver. The truck's own rolling force produces the braking power needed, to the limit of the driveline components' strength.

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Oil does all the braking work—absorbs all the braking force. The new TORQMATIC BRAKE takes over from friction brakes on downhill hauls, saves regular service brakes for complete stops or "snubbing" on curves. It's

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formed. While bylaws were being revamped to permit the growth of the organization, it became apparent that a governing body had to be formed which would include representation from all these chapters. Thus, the EGCA Board of Governors was formed. Less than a year later, in February, 1953, the first statewide convention was held.

Joint-Venture Example

A good example of how members use EGCA for joint-venture construction is currently found at the University of California in Los Angeles, where two member firms are working on a $125,000 grading and paving contract. The job called for grading and paving around several of the completed buildings. Firms which took the contract include Westway Excavating Co. and M. S. Mecham & Sons of Southgate.

The grading portion of the contract called for moving 100,000 cubic yards of material and included both heavy and light grading. The tricky dirt job also included dry wells for the disposal of sprinkling water, blankets of gravel, straw, and topsoil, as well as topsoil stockpiling and the rehandling of earthwork to fit other construction schedules. It was the kind of job building contractors dislike. But it exemplified EGCA's idea that dirtwork can often be let to the owner's advantage by letting it separately to a specialty outfit.

Westway and Mecham had a combined equipment pool including just the machines which seemed suitable for this particular work. Specifications called for the removal of a narrow strip about 3 feet thick from the very edge of a vertical 23-foot bank. Two small D-Roadster Tournapulls were brought in for this work. In other sections of the grading area, two larger C-Roadsters were used. Two heavier Model C Tournapulls with D8 and D7 push tractors worked where excavation quantities were heavy. The job called generally for haul work under 1,000 feet, with accurate grades in almost every stage, so various levels could be established for several materials.

Stockpiled topsoil was brought back into areas required and was laid down from an agricultural standpoint exactly opposite to the high-density provisions of some of the compacted areas.

One Job Done for Profit

The job which ranks above anything EGCA has done to date, however, was a demonstration of dirt-moving skill and speed in connection with the new industrial plant of Minneapolis-Honeywell Regulator Co., now being completed near 174th and Western Ave., Los Angeles.

Taking a contract for 32,000 cubic yards of grading, EGCA mobilized over a weekend and moved in 157 pieces of equipment, including practically every make and type of earth-moving machine. Almost every EGCA member furnished at least a piece of equipment and an operator. In addition, several Los Angeles equipment distributors furnished equipment for the venture.

Thrown into the job, among other equipment, were 4 tractor loaders, 11 motor graders, 11 dump trucks, 9 water trucks, 9 sheepsfoot rollers, 20 tractors, and 18 rubber-tired motor scrapers, including Wooldridge, Allis-Chalmers, Caterpillar, and LeTourneau-Westinghouse. Such miscellaneous equipment as a radio car, heavy-duty tire truck, chemical toilets, a mobile diesel injection-equipment service unit, fuel trucks, a helicopter for picture taking, and first-aid trucks were also pressed into use. There were 17 low-bed trailers on the job, and two truck cranes, a Gradall, and one power shovel completed the picture.

The 32,000-yard dirt job was finished in only 20½ hours of working time. Heavy sandy clay on the 15-acre site was moved at the rate of 1,500 cubic yards an hour. When the final figures were in, EGCA men had netted $8,500 for their treasury. More important, the organization had established itself favorably in the minds of almost everyone in southern California through the wide publicity given the project by radio, television, and newspapers.

Group With a Future

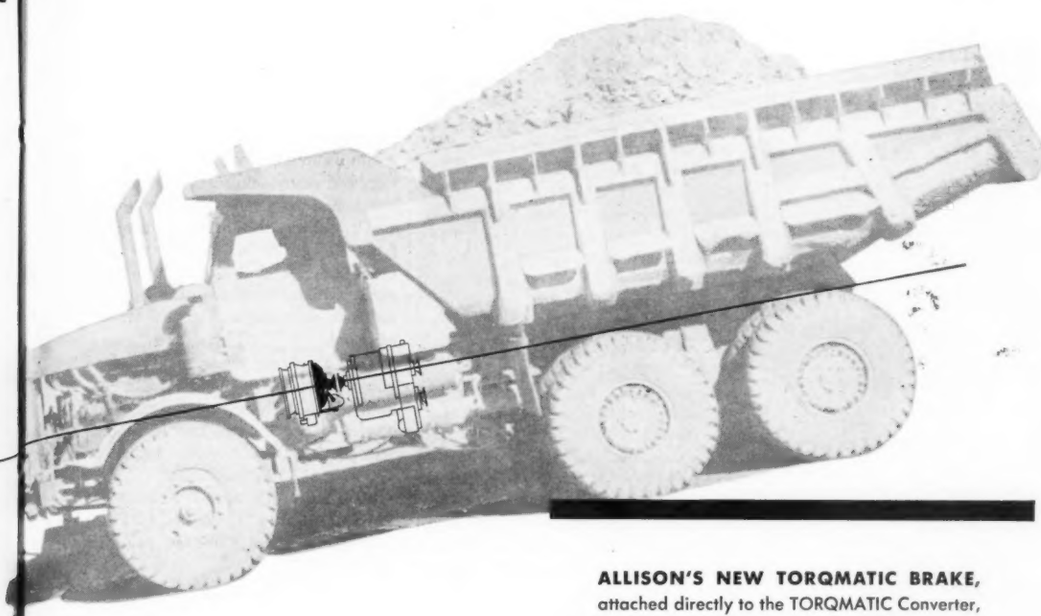
Recently EGCA had the professional courage to call for strict specifications on compaction and earth-moving in hillside slide areas. Many fills and slopes failed two years ago, literally sliding away during wet winter weather. The members worked closely with Los Angeles city, county, and state engineers to formulate higher standards, and today 95 per cent Modified AASHO densities are common requirements.

EGCA, with its headquarters in Los Angeles, now seems well rooted. Membership in the Los Angeles Chapter totals 170. In other chapters, membership is growing rapidly.

Members now receive manufacturer's information on equipment operation, upkeep costs, and operating costs. There is a growing tendency for EGCA contractors to bid more realistically.

EGCA's organizational structure reflects most of today's problems. Committees include those on licensing, state laws, grievance, labor relations, corporate bylaws and articles, trenching, paving, heavy equipment, small equipment, and membership. Each business meeting is devoted to various aspects of these problems.

In daily contacts, whether they be business or social, members are finding out that all excavating contractors are facing the same problems and working toward the same goals. THE END



ALLISON'S NEW TORQMATIC BRAKE, attached directly to the TORQMATIC Converter, has three major parts — a turning rotor (or "paddle wheel") attached to the torque converter; non-moving or fixed stator vanes cast into the brake housing; and a control valve.

Here's How it Works: To brake a truck going downhill, the driver pulls the handy control lever to let oil into the brake. The truck's wheels turn the rotor or "paddle wheel" through the truck's transmission. The rotor throws the oil against the stator vanes which resist the oil flow. This makes it harder for the rotor to turn and correspondingly makes it harder for the truck's wheels to turn. The driver gets more braking by letting more oil into the brake. He reduces braking by reducing the amount of oil in the brake. The new brake provides up to 400 h.p. of continuous braking effort.

the *first* downhill braking unit designed and installed as an integral part of the truck's driveline. It bolts directly on the TORQMATIC Converter housing—adds only 4 inches to the converter's length. The brake and converter use the same oil. There are no freezing problems in winter. The TORQMATIC BRAKE can be specified in new trucks equipped with Allison TORQMATIC DRIVES.

If you're hauling on hilly, mountainous downhill runs, you can cut costs and increase production with Allison's new TORQMATIC BRAKE. For full details, contact your truck manufacturer or write for Bulletin SA 1026 to:

ALLISON DIVISION OF GENERAL MOTORS
Box 894C, Indianapolis 6, Indiana

TORQMATIC BRAKE

NEWEST MEMBER OF THE TORQMATIC DRIVELINE

Line of Heavy-Duty Tires

■ A booklet presenting the company's complete line of Commercial tires is offered by the U. S. Rubber Co., 1230 Avenue of the Americas, New York 20, N. Y. Of particular interest to contractors is the section on tires for off-the-highway equipment.

The booklet describes tires for every condition of traction, load capacity, flotation, and cut and wear resistance. It is pointed out that all U. S. Royal off-the-road tires have specially compounded treads to resist cutting, chipping, and tearing. Stronger carcasses provide heavy-duty service with resistance to impact and bruising.

With this description of the company's line, the booklet combines a discussion of a number of tire topics of interest to the tire user. Sections are devoted to the effect of speed and inflation on normal tire life, the economy of using the proper tire size, and dual-tire matching. There are a number of load and inflation tables listed and a table of material weights.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 799.

Eller Re-Elected at BTEA

Beginning another five-year term as chairman of the board of governors of the Building Trades Employers' Association of New York City, is Peter W. Eller. He was first elected chairman in 1949, after serving four terms as president of the organization.

The New Leader snow tractor can travel over snow with the aid of its special track.

Lightweight Tractor Hauls on Heavy Snow

■ A lightweight tractor that can pull a loaded sled through heavy snow and extreme cold has been developed by Highway Equipment Co., Inc., 616 D. Ave., N. W., Cedar Rapids, Iowa. Capable of hauling ½ to 1 ton where the terrain is not too rough and with a top speed of about 15 mph, the New Leader snow tractor will find many light hauling uses on the large-scale construction jobs being carried out in northern areas.

All parts, including the motor, have been designed to operate in minus 65-degree weather. The motor is a 6-hp Wisconsin and can be removed in about three minutes to be carried indoors to keep it warm for starting the next morning.

The snow tractor has been designed for simple operation. The machine has eight speeds, forward and reverse, but has no gears, the manufacturer reports. To change speeds, a lever is moved back for high and forward for low. All moving parts subject to wear have been designed so that a person with little mechanical ability can quickly install them.

Traction for the tractor is provided by a 20-inch-wide track placed around two in-line tires. The 6.00 x 16 and 6.00 x 9 tires are equipped with puncture-proof tubes. The smaller tire may be removed, along with the track, for dry summer operation. The tractor can make sharp right and left turns and is said to run with full speed and power even in reverse.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 745.

Bituminous Spreader

■ Literature is available on a bituminous spreader that will lay a mat of hot or cold-mix. The Burch bituminous spreader is described as a simple machine for new construction and resurfacing work. The machine can be used with any dump truck, taking the material directly from the truck body into the machine hopper and down to a feed gate which provides the proper amount of material for the strike-off blade.

The brochure describes the feed gate and strike-off blade adjustments and the unit's mounting and steering. The spreader is furnished in models with 8 and 10-foot inside widths in 1¾ and 2½-ton capacities.

To obtain this literature write to the Burch Corp., Crestline, Ohio, or use the Request Card at page 18. Circle No. 800.

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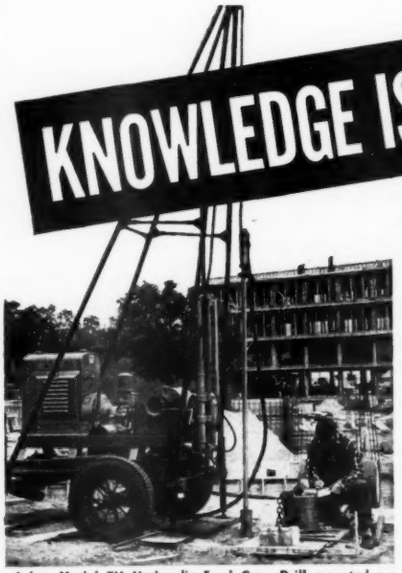

Acker Model TH Hydraulic Feed Core Drill mounted on two wheel trailer engaged in soil sampling and foundation test boring for a new building.

This Acker drill owned by a leading Southern University, is used not only for instructing engineering students, but commercial testing as well. In the latter capacity, it is in much demand by State governmental engineering departments for soil sampling and foundation test boring.

To see why Acker drills are preferred by leading engineers everywhere, write for Bulletin 30, C&E.

ACKER DRILL CO., Inc.

725 W. Lackawanna Avenue
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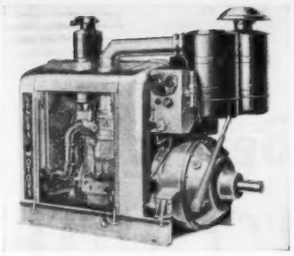


Diesel Power Package

■ A new diesel power unit recommended for use in rock crushers, small shovels, air compressors, pumps, and other construction equipment is announced by the Detroit Diesel Engine Division of the General Motors Corp., 13400 W. Outer Drive, Detroit 28, Mich. The valveless diesel power package develops 76 brake hp at 2,500 rpm but weighs only 1,450 pounds.

The two-cycle engine has four cylinders arranged in line and is a square unit with 4.1-inch bore and 4.1-inch stroke. Compression ratio is 18:1.

One feature is the elimination of valves and valving mechanisms, accomplished through the use of intake and exhaust ports in the cylinder liners. A pneumatic-type governor that has no rotating parts and a lubricating oil pump built around the crankshaft eliminate the need for gear or chain drive on this assembly.

For further information write to the company, or use the Request Card at page 18. Circle No. 706.

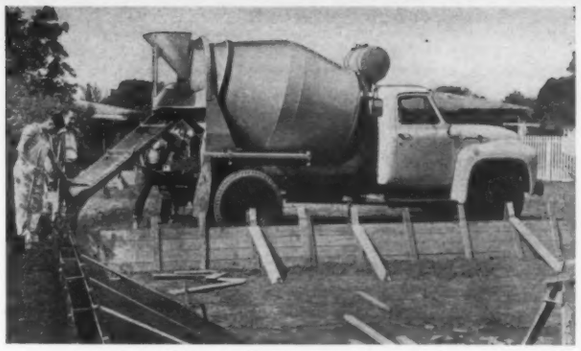
St. Paul Names Brown

Serving truck equipment distributors in Milwaukee, Wis.; Ft. Wayne, South Bend, and Indianapolis, Ind.; Decatur, Springfield, and Chicago, Ill.; and Davenport, Iowa, is John E. Brown, newly named district manager for the north-central territory of St. Paul Hydraulic Hoist, Wayne, Mich.

Power Takeoff Added To Truck-Mixer Units

■ The 3 and 3½-yard models of Challenge truck mixers are now available with power takeoff. The new feature permits full, legal-rated payload capacity on a shorter wheelbase on both standard or cab-over-engine trucks. Ease in maneuvering in cramped quarters and around building forms is now made possible.

Power is taken from the truck transmission and permits easy shifting of gears while the truck is in transit. The power takeoff has a high and low gear which permits a wide range of operating and discharge speeds. Charging and discharging of the load is controlled from either the normal position at the rear of the mixer or from the driver's position in the truck cab.



The power takeoff available in the Challenge 3 and 3½-yard mixers permits greater payload and more maneuverability.

The complete mixer unit, including the power takeoff, is offered ready to install on any new or used truck with no other auxiliary mechanism to install.

For further information write to Cook Bros. Equipment Co., 3334 San Fernando Road, Los Angeles 65, Calif., or use the Request Card at page 18. Circle No. 687.

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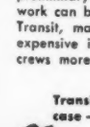

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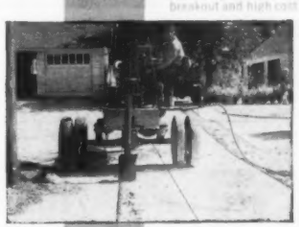
MODEL C-130 ONE OF 5 MODELS, GAS OR ELECTRIC POWERED

Save up to 50% in labor and material. Saw repair patches — water, gas, sewer and air line trenches in floors, streets, walks and highways. Save too, by sawing contraction joints in floors and highways . . . eliminate costly hand forming and spalling.

"4 OUT OF 5" BUY CLIPPER CONCRETE SAWS. Three-Point Suspension (see below) . . . the Patented Water Application which increases blade life and speed . . . perfect balance and dashboard controls for operating ease and maneuverability — these are the reasons WHY — "4 OUT OF 5" Buy Clipper!

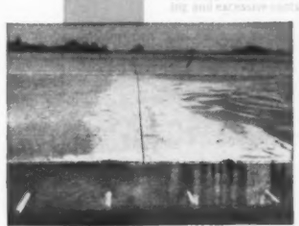
Only minimum replacement material needed and is poured to straight, smooth edges.

Joe! Stop excessive breakout and high cost!



Sawed lines confine breakout fracturing and speeds removal up to 50%.

Joe! Stop ragged fracturing and excessive costs!



Contraction joints in floors or streets eliminates spalling, 50% less seal and are maintenance-free.

Joe! End slow, costly hand forming, spalling!

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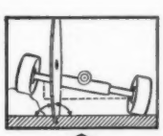
. . . guaranteed to . . . "Provide the fastest cut . . . at the lowest cost." Clipper alone can supply every necessary metal bond . . . in over 36 specifications.



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Gravel borrow material is loaded into a Euclid bottom-dump by a 1½-yard Lorain Model 79 shovel. The material was used to fill swamp excavations. *C. & E. Photo*

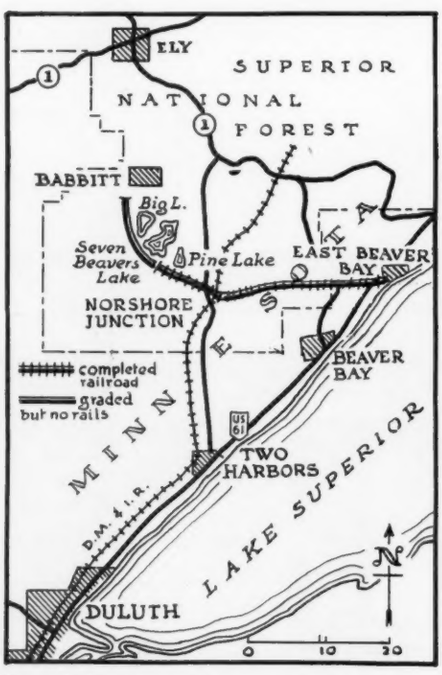
Iron-Bearing TACONITE Sets Off Co

By RALPH MONSON, Field Editor

Where the backfilling required only short hauls, LeTourneau (left, pulled by HD-19) and Wooldridge (right) scrapers were used on the job. *C. & E. Photo*

BUILDING 47 MILES of railroad through the wilderness of Minnesota's North Shore country is one of the vital projects in the construction of the Reserve Mining Co.'s taconite processing facilities at East Beaver Bay on Lake Superior. Construction of the railroad, which will bring the ore from the mine at Babbitt to the processing plant, was started in September, 1951. Main line track is expected to be completed by July, 1954, with yards and terminal facilities taking another year.

The eastern 21 miles of the road connect the new processing plant, which will be known as the E. W. Davis Works, with the Duluth, Missabe, & Iron Range railroad at a point known as Norshor Junction. This section was completed first in order to provide rail deliveries of construction supplies to the processing plant site. From Norshor to within 2 miles of the eastern termi-



A lubrication van mounted on a Studebaker 6x6 truck services a Caterpillar D8 tractor. The van carries Alemite equipment for handling bulk lubricants and a 100-watt Homelite generator for night work. *C. & E. Photo*

Off Construction Boom

Part of huge privately financed program in Minnesota is 47-mile railroad between mine and processing plant

One of the most expensive privately financed construction projects in the country is the taconite processing facilities being built for the Reserve Mining Co. in the northeastern wilderness of Minnesota. Taconite, a hard, tough, iron-bearing rock, represents 95 per cent of the iron ore reserves of the Mesabi iron range, which has supplied 85 per cent of the nation's ore from its rich deposits. While the reserves of other iron-bearing rock have dwindled to a point where considerably less than half remains to be mined, there is a vast and unmeasured supply of taconite. The amount mined thus far represents a fraction of the total.

The Reserve Mining Co. already has a taconite plant in operation at its taconite mine in Babbitt, Minn. The present project involves a new and larger plant, together with a harbor, power plant, townsite, and connecting railroad (see accompanying article) on the shore of Lake Superior at East Beaver Bay, Minn.

nus, the line was put into operation in January, 1953. The main line was extended to the plant site in 1953, with grading and track work progressing from Norshor toward Babbitt during the same season.

Planning and layout of the rail facilities was done by Reserve Mining's engineering staff under the direction of Charles F. May. Contractor for the railroad is Hunkin-Arundel & Dixon, a joint venture of The Hunkin-Conkey Construction Co., Cleveland, Ohio; Arundel Corp., Baltimore, Md.; and L. E. Dixon Co., San Gabriel, Calif.

Design Features

From an elevation of 867 feet above sea level at the East Beaver Bay plant site, the main line climbs 927 feet in the first 17 miles, then drops 188 feet to the western terminus at Babbitt. Maximum ascending grade for eastbound loaded trains is 0.5 per cent, while the maximum for the westbound empty trains is 1.5 per cent.

Main track grading sections have a 24-foot top with 1½:1 cut and fill slopes and backslopes. Flat bottom ditches are 2 feet wide and 2 feet deep. In rock cuts, the section is modified by steepening the backslopes. On this subgrade, an initial ballast of up to 10 inches of gravel was placed under the ties. Creosoted southern hardwood ties, 7 x 9 inches in section and 8½ feet long, are placed on the gravel ballast.

Later, the gravel ballast becomes a base as crushed stone ballast is added at the rate of 2,720 cubic yards per mile. With allowances for compaction and loss, the final section is assumed to have 5,000 cubic yards of crushed rock and gravel ballast per mile, providing a lift of approximately 15 inches under the ties.

Bridges and Culverts

Bridges carry the railroad over four rivers, a road crossing, and a crossing with another railroad. Armco culverts provide drainage under the roadbed at other points. A total of 13,600 linear feet of culvert ranging from 24 to 84 inches in diameter is being installed.

Concrete piers resting on solid rock or supported by piling make up the substructures of the bridges with deck plate girders or rolled beams spanning between piers. River bridges have open timber decks, and road and railroad overpasses have wrought-iron plate decks with walkways cantilevered out from the beams. Armco bin-type retaining walls were used to retain the approach fills for the overpasses.

The major alignment problem was that of seeking stable ground for getting around the swamps and several lakes which lie in the direct route between Babbitt and East Beaver Bay. Largest of the lakes are Big Lake, Seven Beavers Lake, and Pine Lake. In making the survey of the line, a base line was first established from ground and aerial observations. A strip 2,000 feet wide centering on the base line was then mapped from aerial survey, and 5-foot contours were plotted.

The final alignment was selected from these contour maps with slight modifications being made by the ground survey parties as they staked the location on the ground. Aerial surveys were made by Aero Service Corp., Philadelphia, Pa.

Set Up Construction Camps

One of the first moves by the contractor was to establish a construction camp at Norshor Junction. Steelox buildings, 12 feet wide and 35 feet long, make up most of the camp including bunkhouses, mess hall, and offices. Ironwood 35-foot trailers also provide some of the living accommodations. The camp has its own water system and a Caterpillar 315D generator set to provide electricity.

A similar camp was established at a site near Seven Beavers Lake and was called Camp Seven Beavers. At both camps, a major operation is the servicing and repair of equipment. Both camps are equipped with quonset-type repair shops where complete overhaul of the heaviest equipment can be accomplished. Greasing and other routine servicing is done by crews operating from these camps using equipment adapted to the rugged country.

Fuel is supplied to equipment wherever it is working from a 1,500-gallon fuel tank mounted on a four-wheel-drive GMC truck equipped with a supply pump. Lube trucks with van bodies mounted on Studebaker 6x6 trucks carry complete Alemite lubricating systems, air compressors, and Homelite 1,000-watt light plants for powering electric tools and for night lighting. Daily servicing of equipment is done during regular working hours on the job.

In these remote areas and with a large fleet of rubber-tired equip-

Track spikes are driven with a Chicago Pneumatic spike driver. The Le Roi Tractair on the handcar supplies the necessary air. *C. & E. Photo*

In another borrow pit, an end-dump Euclid is loaded by a Lima 1001 crane with a 2½-yard dragline bucket. *C. & E. Photo*

ment, it is imperative to have equipment for handling the big tires. A 4x4 Chevrolet truck with front winch and A-frame mounts the heavy tires quickly and also loads and carries the spares. A Gardner-Denver air compressor and storage tank supplies air for inflation.

There are few roads and many swamps in the wilderness area around Camp Seven Beavers. With the aid of the Federal Forest Service, a high-land access road was located and graded from the Toimi road to the camp, a distance of 5 miles. When the railroad is complete and the camp is removed, this road will serve the Forest Service as an access for fire fighting.

Clearing and Grubbing

In a few areas, virgin pine timber was encountered; but most of the route lay through growths of poplar and birch on the high ground and spruce in the swamps. Most of the clearing was done by hand-clearing crews equipped with Disston and Mercury chain saws working both directions from the base camps.

Areas in which selective cutting of merchantable sizes was not required or justified were cleared by Caterpillar D8 tractors with tree dozers. The pointed, saw-like blade of the tree dozers made quick work of both small and large trees, eliminating much of the hand cutting. Tractors with standard dozers, fork fronts, and rock rakes completed the clearing and grubbing, leaving the ground ready for the grading crews.

Draglines Dig Muskeg

A first step in the grading operation was to muck out the muskeg swamps. These varied in size from small shallow patches to deep wet swamps up to 3,000 feet long and 27 feet deep. Where possible, the swamps were first drained or the water level lowered as much as possible. In many cases, this involved extensive ditching through swampy areas or cutting through banks to

Use Dozer Rope You Now Throw Away!

Cut Costs with Tuffy DOZER ROPE and Tuffy Cut-off Procedure

Specially designed for Dozer Use, Tuffy Dozer Rope has the stamina needed to keep on handling the blade long after ordinary ropes are worn out!

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In Half The Time normally needed for replacement, your Dozer is back on the job! Remember, you needn't replace the whole rope. Just feed enough from the reel to replace the part that's damaged. Users report down-time reduced considerably when they install Tuffy!

Combine this built-in strength of Tuffy with the savings offered by the Tuffy Reel Mounting and Tuffy Cut-off Procedure and you'll see why more and more construction men are switching to Tuffy! Try Tuffy Dozer Rope—and *save* the difference!

Tuffy **Dragline**
Maximum abrasive resistance, extra flexibility! Rides better on grooves, hugs drum when casting!

Tuffy **Slings**
It's next to impossible to materially damage the 9-part machine-braided wire fabric construction of Tuffy Slings by kinking. For longer service with safety, buy Tuffy.

Tuffy **Hoist Line**
Designed especially for hoist line use on cranes, clamshells and derricks. Flexible and tough.

Tuffy **Scraper Rope**
Flexible enough to withstand sharp bends . . . stiff enough to resist looping and kinking when slack! Moves more yardage.

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After dumping its load at the end of a fill, this Euclid is towed away backwards by an Allis-Chalmers HD-14. *C. & E. Photo*

drain one swamp into another at a lower level.

Large draglines working from mats dug out all the muskeg for the complete width of the roadway section, including the 1½:1 slopes, to the full depth of the swamp. This meant that many of the excavations went 20 feet or more below water. In deep swamps where the roadway section became very wide at the base, it was sometimes necessary to use two draglines in tandem, one digging and the second casting the spoil bank back.

Mats which supported the heavy draglines on the soft muskeg swamps were 4 feet wide and 20 feet long and were made up of three layers of 3-inch hardwood planks. In some places, it was necessary to use several thicknesses of mats criss-crossed.

Deep wet swamps which could not be drained were mucked out in the wintertime. Caterpillar D4 and Allis-Chalmers HD-5 tractors dozed the snow from the right-of-way, permitting the frost to penetrate. When a sufficient crust had frozen over the top, the draglines, with their mats, moved out on the crust and excavated the muskeg.

Typical of the large draglines used for this work were a P&H Model 955A, a Lima 1001, a Link Belt K-580, and a Manitowoc 3500. All are 2½-yard machines. Long booms and perforated buckets facilitated the handling of the relatively light muskeg and water.

Backfilling operations followed the draglines as closely as weather conditions and availability of equipment permitted. On occasion, wet weather bogged down the hauling equipment, with the result that draglines were stranded on the far side of a swamp where it was nearly impossible to supply them with the necessary fuel and parts.

In one case, two P&H draglines dug out a swamp 18 feet deep and almost 1,000 feet long. Rain tied up the equipment which was making the fill. The only way the draglines

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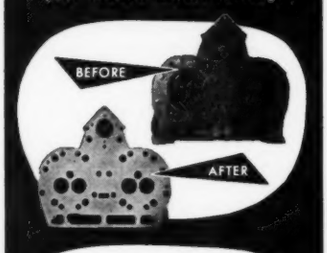
when THE GUTH COMPANY renews your broken Diesel castings



Cut your repair time and costs. Let THE GUTH COMPANY restore broken or worn heads, blocks, castings to *guaranteed* new or better-than-new condition, by THE GUTH COMPANY Fusion Process . . . successfully used for more than a quarter century.

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Whether it's steering discs for tractors, master facings for road graders, or clutch plates for trucks . . . Moore Brothers, of Staunton, Virginia, replace with Velvetouch. They know, from actual experience, that Velvetouch clutch plates, facings and brake linings keep heavy duty equipment out of the repair shop and on the job!

Unlike ordinary friction material, Velvetouch is all-metal . . . made from powdered metals, compressed and fused with a strong steel backing. As a result, it lasts longer, can't burn like asbestos and requires fewer adjustments . . .

Make your next replacement genuine Velvetouch . . . and you'll know why leading earthmoving machinery manufacturers use Velvetouch as original equipment!

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* TORONTO, ONTARIO—The S. K. Wellman Co. of Canada, Ltd., 208 Bartley Drive, O'Connor Depot
* CLEVELAND—200 Egbert Rd., Bedford, Ohio
* PHILADELPHIA—1545 West Belfield Ave., Philadelphia 41, Pa.
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* DALLAS—3407 Main Street, Dallas 26, Texas
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could be reached for servicing was by boat across the excavation and then overland, a distance which grew greater and greater as the machines continued along the right-of-way. Seven hundred feet of 1½-inch pipe laid across the muskeg spoil bank and 500 feet of 1¼-inch hose coupled to the pipe gave temporary relief until enough fill could be placed to bridge the gap.

An interesting sidelight which emphasizes the supporting value of the frozen muskeg occurred during the early stages of construction. The right-of-way had been cleared from Norshor Junction to East Beaver Bay, but grading had not yet started. A 6-yard Lima shovel was delivered to Norshor by the D. M. & I. R. and was needed at the East Beaver Bay location as quickly as possible. Highway load limits prohibited moving even dismantled shovel sections, which weighed up to 55 tons.

It was decided to skid the heavy parts down the right-of-way, across the frozen swamps, by sled. I-beam runners were fabricated, and the heavy shovel sections were mounted. Nine Allis-Chalmers HD-19 tractors were hooked to the sled and the shovel was delivered safely. Actually, only six of the HD-19's were needed to pull the sled. The other three were reserves in case the heavy sled started settling into one of the swamps.

Grading

Backfilling the swamp excavations, as well as other grading operations, was done by a variety of equipment, with a majority of the longer haul work falling to the big shovels and fleets of end-dump and bottom-dump Euclids. On short hauls, a fleet of Caterpillar and Allis-Chalmers tractors with LeTourneau and Wooldridge scrapers took over. Seven Wooldridge Terra-Cobras helped fill the gap on the intermediate hauls.

The high ground-water table over most of the route made it necessary to ditch and drain most of the right-of-way before the scrapers could go to work. Draglines and pull-shovels ditched both sides of the right-of-way so the water would drain to lower levels or to natural watercourses. Often, they dug extensive drainage channels far to the side to lead the water away.

In addition to almost 2,000,000 cubic yards of roadway excavation on the main line, more than 1,500,000 cubic yards of granular borrow was required. Most of this borrow material went into the swamp excavations where unsuitable material was removed.

Suitable borrow material was obtained from pits located at strategic points along the route, although there were hauls of more than a mile. Draglines and shovels loaded the borrow material into end-dump and bottom-dump Euclids. Even when only partly loaded, the "Eucs" had trouble in the soft wet fills. At times, they had to be pushed or pulled by tractors.

Tractors with dozers, usually Caterpillar D7's and D8's or Allis-Chalmers HD-19's, placed and spread the fill, working from the center out toward the sides. In this way, soft or unsuitable materials were forced out to the sides and not trapped in the fills. An Adams and six Caterpillar No. 12 motor graders finished the roadbed and maintained haul and camp roads.

Ballasting

Gravel ballast is produced in a pit at Norshor Junction. Pit-run material up to 24 inches is crushed to 3-inch maximum size and hauled directly to the roadbed. More than 150,000 cubic yards of gravel ballast will be placed on the main line alone.

After the ties and rails are placed, final ballasting is done with crushed rock obtained from a quarry on the lake shore near East Beaver Bay. This quarry, with its large crushing plant, is also producing concrete aggregates for construction in the plant and harbor areas.

Rock ballast is crushed and screened so that 100 per cent passes the 2½-inch screen, with 0 to 5 per cent passing the ½-inch screen. This material is delivered to the roadbed by truck and rail and is tamped around the ties with the aid of a Pullman-Standard ballaster.

Ties and Rails

Creosoted southern hardwood ties are delivered to the project by rail and distributed along the grade together with the tie plates. An American locomotive crane swings the 140-pound main-line rails from a flatcar to the aligned ties. The track crew bolts the joint bars with a Chicago Pneumatic impact wrench. Track spikes are driven by C-P spike drivers. A Le Roi 105

Power Plants Speed Construction
USE POWER TOOLS—FLOOD LIGHTS

WINPOWER PORTABLE POWER PLANTS

Offer the dependable, low cost source of electric power that every contractor wants to operate power tools and lighting equipment. Available with bolt-down bases, portable 2 wheel dollys or carrying handles.

These plants are the big value for long life and performance.

Also available — the famous Nite-Hawk trailer mounted, flood light units.

WRITE FOR LITERATURE AND PRICES

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TEL. 236 NEWTON, IOWA

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20 k.w. — A.C. or D.C.

the biggest part
of a HENDRIX BUCKET
is its...
Payload!

⅜ to 40 Cubic Yards

Hendrix Lightweight Dragline Buckets

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

A TYPE AND SIZE
FOR EVERY
DIGGING PURPOSE

Tractair mounted on a handcar supplies the air.

The 21-mile section of the railroad between the plant site in East Beaver Bay and Norshore Junction has been completed and is in daily use. Grading on the western section is nearly finished, and rail has been placed as far as Seven Beavers Lake. From there to Babbitt, the roadbed is being used as a roadway for the equipment which is finishing up the excavation and grading. The remainder of the track will be placed this summer.

When the first part of the E. W. Davis Works is ready to go into operation in 1955, the railroad will be prepared to serve it, complete with sidetracks, yards, and other facilities.

Personnel

Reserve Mining is a corporation owned jointly (50 per cent each) by the Armco Steel Corp. and the Republic Steel Corp. E. C. Lampman is manager of construction for Reserve. Larry Edwards is office manager, and C. F. May is resident engineer in charge of the railroad.

Project manager for Hunkin-Arundel-Dixon is V. F. Robertson. He is assisted by Paul R. Smith, with Frank Castner as general superintendent of railroad construction. These supervisors, and the many foremen on the spreads along the route achieve good coordination with a minimum loss of time through the use of two-way mobile radios. RCA units are installed in 25 trucks and cars, in the three railroad locomotives, and at three base stations. THE END

Welding Electrodes

■ A new line of 11 to 13½ per cent manganese-nickel steel welding electrodes is announced by the Stulz-Sickles Co., 134 Lafayette St., Newark, N. J. The ac or dc welding electrodes are said to run as easily as stainless or mild-steel electrodes.

Manganal Flo-Kote welding electrodes weld in overhead, vertical, or downhand positions, and join dissimilar metals. They are said to eliminate all the special techniques of application required in welding manganese-nickel steel. No peening is necessary. The welds can be cut with an ordinary oxyacetylene flame, and the electrodes, according to the manufacturer, are more economical than other alloy steel electrodes with comparable properties.

For further information write to the company, or use the Request Card at page 18. Circle No. 773.

The Care of Wire Rope

■ Stretching the life span of wire rope is the theme of a new booklet from the E. H. Edwards Co., Butler Road and Industrial Way, South San Francisco, Calif. The pamphlet lists some of the common abuses of wire rope and how to avoid them.

Sections deal with handling, installing, storing, and lubricating wire rope. Illustrated with photographs, technical drawings, and diagrams, the booklet gives suggestions for correct methods of operation.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 682.

Deadman Safety Device For Sandblast Machines

■ A new remote-control deadman valve for all types of sandblast machines that provides instant control of blasting at the nozzle head is announced by Clementina, Ltd., 2277 Jerrold Ave., San Francisco, Calif. The Recova valve is said to reduce manpower and material costs by 20 to 40 per cent and to make for greater safety on the job.

Blasting is started by depressing a hand valve which is released to stop blasting. The resulting pressure drop opens a bleed-off valve in less than two seconds, completely releasing all pressure. An air intake valve through which the pot is charged is simultaneously closed so that no pressure may enter. If an accident should cause the operator to drop the nozzle, the deadman feature of the hand valve instantly stops the machine to protect against injury or damage from blast.

For further information write to the company, or use the Request Card at page 18. Circle No. 719.

American Tractor News

John Tom, consulting engineer for the past eight years, has been appointed director of engineering for the American Tractor Corp., Churubusco, Ind.

20 Second START
FOR STUBBORN DIESELS with
STAVIS STARTING FLUID
Pour or spray into air intake. Sure, quick starts. Save batteries. Save time. Save money.
Used by diesel operators everywhere. Some distributor territories still open.
Write for details today.
$30. PER CASE SHIPPED PREPAID
STA-VIS OIL COMPANY 202 EAGLE ST., ST. PAUL 2, MINN.

Jaeger 365 has the "plus" air needed

Drilling 24" wick holes in blue muck

To drain and stabilize river bottom blue muck bordering Highway 51, the Leon B. Stilley Construction Co., of Marion, Ill., used a 24" auger to drill wick holes 25' deep, spaced 25' apart. (This was only the second time that sand wicks have been used in Illinois.)

To pull this auger in the sticky muck required a 15 hp air motor using 330 cfm of air @ 100 psi — too big a job for any "old standard" 315 compressor, but a natural for a Jaeger 365.

Jaeger, and Jaeger alone, is completely engineered throughout all ratings — 600, 365, 250, 185, 125 and 75 cfm — to match the air demands of modern tools. For example: Jaeger-engineered valves are 75% to 100% larger for free air flow and up to 10 times longer valve life. Valve seats and discs are machined on both faces simultaneously to parallel planes within 7/1,000,000 of absolute flatness. This exclusive method eliminates the distortions which "spring back" into valve discs under ordinary face grinding. You get positive leak-proof closure.

Ask your Jaeger distributor to show you the "plus" features of a Jaeger — its pressure lubricated, W-type compressor unit, its larger intercooler, air receiver, clutch and engine. They enable a Jaeger to deliver 15% to 25% more air than others at the lowest known cost per cubic foot. For full details, ask for Catalog JC-1.

THE JAEGER MACHINE COMPANY

701 Dublin Avenue, Columbus 16, Ohio

TRACTOR LOADERS • PUMPS • CONCRETE MIXERS • TRUCK MIXERS • PAVING MACHINES

This side-dump trailer, manufactured by the Easton Car & Construction Co., Easton, Pa., takes 32-ton earth loads and is pulled by a Caterpillar DW20 tractor.

Side-Dump Trailer Is Off-Highway Unit

■ A side-dump trailer that hauls 32-ton earth loads is made by the Easton Car & Construction Co., Easton, Pa. The Model TD-1832H trailer, which can dump while in motion, is built to work with the Caterpillar DW20 tractor.

Dumping is powered by two outboard-mounted hydraulic jacks controlled from the operator's seat. Dumping is from one side only, but interchangeable mounting of the body and jacks permits the direction of the dump to be reversed.

The door mechanism operates automatically as the body is raised or lowered. While the maximum dumping angle is 50 degrees, the door becomes flush with the floor at 20 degrees to form a chute that will discharge the load clear of the running gear. In the fully dumped position, the door can ride up and down over a windrowed load without injury to the operating mechanism.

Body and trailer are of formed and welded construction, using ⅜-inch plate, with an oak cushion and ½-inch liner plate to reinforce the floor. Formed and welded cradles reinforce the floor and back of the body. The trailer frame is of the gooseneck torque-beam type, with open front and rear for self-cleaning of spilled materials. Standard equipment includes Bendix-Westinghouse air brakes with relay and emergency valve and reservoir. The trailer is offered for sale through all Caterpillar dealers.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 797.

HRB Publications

Two new publications are available from the Highway Research Board of the National Academy of Sciences—National Research Council, 2101 Constitution Ave., Washington 25, D. C.

"Filling and Sealing of Joints and Cracks in Concrete Pavements" aims to present and discuss certain basic facts pertinent to the problem, promote a more widespread understanding of the various aspects of the problem and of the conditions which must be taken into account, and discuss the various kinds of filling and sealing materials most commonly employed and the functions, capabilities, and limitations of these materials.

"Structural Effects of Heavy-Duty Trailer on Concrete Pavement" discusses road-stress and load-deflection for the three different types of foundations on a test road. It covers the influence of vehicle speed on stress and deflection and contains many stress and deflection graphs along with other data. There is a summary of major findings and a discussion of results of these findings.

The booklets, Bulletin 78 and Special Report 14 respectively may be obtained by writing the Highway Research Board.

Only 2 Field Joints Needed for this 42-ft Sheet Steel Culvert

Three 14-ft sections of 18-in. diameter, galvanized-sheet-steel culvert pipe can be assembled into a 42-ft culvert with only two simple field joints. And it can be done in a few minutes.

Compare this with the number of joints and man-hours required to assemble an equivalent culvert of any other material.

Further, these sections of 18-in. pipe are made of 16-gage sheet, and they weigh about 214 lbs each. This means that they can be unloaded and placed in a trench by two men without the aid of special lifting equipment.

A MORE FLEXIBLE CULVERT PIPE

Pipe made from corrugated steel sheet is strong, flexible and tough, regardless of diameter. It will conform to grade and alignment without pulling apart. It can absorb changing loads caused by shifting or freezing soil.

Bethlehem does not fabricate culvert or drainage pipe, but does manufacture the Beth-Cu-Loy galvanized corrugated and flat steel stock used by pipe fabricators. This copper-bearing steel meets Federal specifications, as well as those of the American Association of State Highway Officials.

The heavy zinc coating and the copper in Beth-Cu-Loy sheets provide a double defense against rust. Their corrosion-resistance is excellent. Pipes made of this steel can be expected to give many years of trouble-free service.

Any Bethlehem sales office will gladly furnish detailed information.

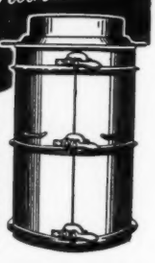
BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETH-CU-LOY *GALVANIZED* CULVERT SHEETS

THE "Quinn Standard" FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 40 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

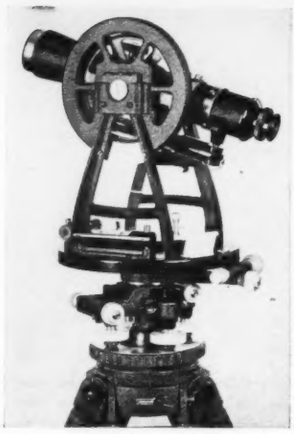
QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

WRITE TODAY. Complete information, prices, and estimates sent on request.

Also manufacturers of
QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1645 – 12th St. Boone, Iowa



This new 5⅛-inch highway engineer's transit is offered by the Fennel Instrument Corp. of America, 478 Water St., New York 2, N. Y. It has an 8¾-inch internal focusing telescope, and a 5⅛-inch circle. Other features are an erecting eyepiece and the use of coated optics. For further information write to the company, or use the Request Card at page 18. Circle No. 728.

Mixer and Elevator For Air-Placement Work

■ A combination mixer and elevator made for use in conjunction with air-placement equipment is illustrated in new literature. The Mix-Elvator, made by the Air Placement Equipment Co., 1009-11 W. 24th St., Kansas City 8, Mo., elevates the material while it mixes. An overhead loading hopper provides a continuous material supply to the placement-machine operator.

A hand wheel operates the adjustable proportioning gate, the position of which is determined by a pointer on the mix-ratio indicator. The tumbling action of the screw-type mixer and the final screening of the material is said to assure a constant and thorough blending.

There is a positive feed so that moisture content of the aggregate does not vary the rate of flow or the ratio of the mix. By changing the engine-throttle setting, the rate of mixing can be adjusted from 2½ to 8 cubic yards per hour.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 798.

Hydraulic and Pneumatic Couplers and Cylinders

■ Literature on hydraulic and pneumatic check valves, couplers, and cylinders is available from The Bruning Co., 9th and J Sts., Lincoln, Nebr. The booklet uses engineering drawings and specification tables to describe the equipment.

Check valves are offered in sizes for tube or hose up to 1 inch in size. The cylinders are single or double action or ram style. They are made in bore sizes of 1½ to 4 inches with rod diameters of ¾ to 1½ inches. Ram diameters are 1½ to 3 inches. The quick-disconnect couplers, in self-sealing and open-flow types, are available in a variety of combinations and sizes up to a maximum hose capacity of 1 inch. In addition to its off-the-shelf stock, the company is equipped to produce special products from drawings or sketches.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 791.

Track-Type Tractors Are Fifty Years Old

Commemorating the fiftieth anniversary of the world's first practical track-type tractor this year, Caterpillar Tractor Co., Peoria 8, Ill., will reflect the anniversary theme in most of its 1954 promotional activities.

It was on November 24, 1904, that the first practical crawler was tested in Stockton, Calif., by the Holt Mfg. Co., one of Caterpillar's parent companies. The firm originated the trade mark, Caterpillar, at about the same time.

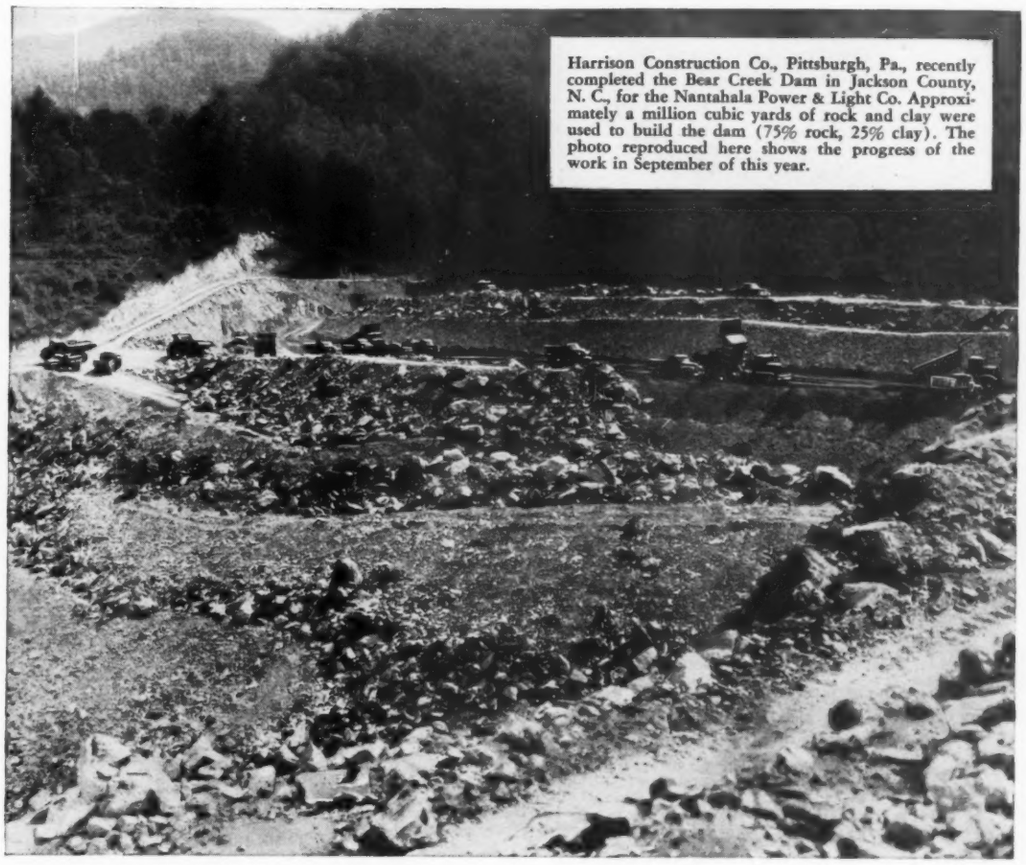
This first unit was the forefather to approximately 340,000 track-type tractors of all makes which are now working in many fields, exclusive of the military, in the United States alone.

A 1-cubic-yard front-end loader with torque converter has been added to the Pettibone Speedall line. Because the torque converter depends on the fluid-drive power transmission principle, this model is controlled through foot acceleration only, without shifting speeds or slipping the clutch. It is pointed out that power is automatically selected for the load handled. The unit is available with either a gasoline or diesel engine. For further information write to the Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 710.

GULF PRODUCTS *and* **FINE SERVICE**

keep equipment rolling

on North Carolina Dam Project



Harrison Construction Co., Pittsburgh, Pa., recently completed the Bear Creek Dam in Jackson County, N. C., for the Nantahala Power & Light Co. Approximately a million cubic yards of rock and clay were used to build the dam (75% rock, 25% clay). The photo reproduced here shows the progress of the work in September of this year.

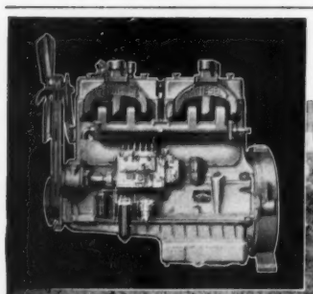
WITH higher-than-ever operating costs threatening every dollar of profit, it will pay you to take stock of the advantages of Gulf Service and Gulf Petroleum Products.

Advantages like these, for example: Quality lubricants that provide an extra margin of protection for every gear and bearing; fuels that insure full power for every engine; expert petroleum engineering counsel; and prompt delivery service. You'll find, as have so many leading contractors, that they all add up to fewer mechanical delays, lower maintenance costs, and an all-round smoother operation.

Let us discuss with you how our products and services can help you on your next job. They are available to you through more than 1400 warehouses in 31 states from Maine to New Mexico.

GULF

A 4½-yard Smith transit mixer on an International truck discharges concrete in front of the Jaeger-Lakewood finishing machine.



WAUKESHA Super-Duty Six DIESEL (WAKD)—six cylinders, 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displacement, peak hp 224 at 1600 rpm.

Cutting a new road—part of the Van Wyck Expressway connecting International Air Port with Flushing, Long Island—with a Waukesha Diesel powered Lorain shovel

Owner A. J. Orlando says...

"TO MOVE DIRT FAST and ECONOMICALLY—I prefer

WAUKESHA DIESELS

to any others I have owned or operated"

A. J. Orlando puts on the power—digging starts! It's that quick—that smooth! It's *fast recovery* that makes the Waukesha Diesel so different. "A. J." knows the difference. So do his operators. He owns not one, but three Waukesha Diesel powered 2-yd. Lorain shovels—all working for the A. J. Orlando Contracting Co., Whiteside, L. I., New York.

Plenty of other contractor-owners, and their operators prefer Waukesha Diesels. For the same reasons. More loads per minute. Extra power in the pinches. All-around dependability. And the lively, responsive acceleration, shock-free operation, and clean burning for fuel economy that you get with the patented spherical combustion chamber of the Waukesha Diesel. Check *all* its features—get Bulletin 1415.

231

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.
New York • Tulsa • Los Angeles

Highway Relocation Eliminates Floo

Motorists Who Use U. S. 75 in the Bartlesville, Okla., area no longer have to contend with heavy traffic congestion within the city or with flood waters from the nearby Caney River north of the city. A 3-mile section of the highway, from Tuxedo Junction in Bartlesville to the northern city limits of Dewey, has been relocated to avoid both difficulties.

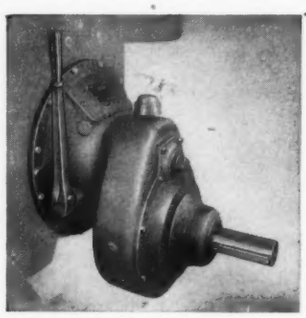
The $618,000 relocation called for grading and the laying of an 8-inch sand cushion base and a 7 or 8-inch concrete roadway with a 1½-inch crown, 24 feet wide on a 130-foot right-of-way. The 7-inch-thick concrete was used along city streets and secondary trafficways, and the 8-inch-thick slab was used out in the open. Also involved was the building of a 209-foot three-span continuous I-beam bridge with concrete handrails across Coon Creek.

The Gillioz Construction Co., Monett, Mo., was general contractor on the job. The paving operation was subcontracted.

Grading

Grading involved 174,245 cubic yards of unclassified excavation. There was 2,000 feet of 8-inch Metaforms in use, plus a considerable quantity of Blaw-Knox 7-inch forms. The crews setting up the forms stayed about 1,000 feet ahead of the finishing machine.

Fine-grading inside the forms was done with a Caterpillar No. 12 or a Huber motor grader. The subgrade was compacted with a Huber two-wheel 10-ton roller and precise



FUNK

GEAR REDUCTION POWER TAKE-OFFS

FOR INDUSTRY AND AGRICULTURE

with the exclusive Straddle Mounted Pinion . . .

This exclusive Funk development assures complete gear tooth contact at all times by providing a pinion with a taper roller bearing support at each end driven by an input shaft with a lubricated floating spline, eliminating misalignment from improper installation or load deflection . . . some of the many reasons why you can expect longer, trouble-free service from FUNK Gear Reductions. Fit all SAE flywheel housings. Special ratios or special adaptions of standard units supplied on small orders. For keeping old equipment on the job economically, write for catalog and prices of Funk Power Take-Offs and Gear Reductions.

FUNK PRODUCTS INCLUDE:

Right-Angle Take-Offs.

Front End Take-Offs.

Jack Shaft Extensions.

Ford Tractor Conversion Kit adapts 6 or V-8 engine, doubles power. (See picture below.)

Here is a new NAA Golden Jubilee Ford Tractor converted with Funk NC Kit, other kits for any Ford Tractor.

FUNK AIRCRAFT CO.
3315 Airport Drive, Coffeyville, Kan.

The two Butler cement bins. The elevated bin has a capacity of 225 barrels while the ground bin holds 450 barrels. At right, a transit mixer is being loaded.

A special container is filled with heated latex rubber joint-filling compound from the Aeroil Heet-Master.

New 3-mile section of concrete pavement on U. S. 75 in Oklahoma not affected by waters of nearby river

tes Flooding

grade was established with a Trail-grader. An International TD-18 was on hand for general utility work and shoulder grading. For the 8-inch cushion base, 82,400 square yards of sand was required.

The concrete plant was set up near the Missouri-Kansas-Texas railroad depot in Dewey. A Lorain crane with a 60-foot boom and a ¾-yard clamshell fed aggregate from stockpiles to an Erie three-compartment batching plant with an 18-ton capacity in each bin. The nearby Butler cement plant had an elevated bin with a 225-barrel capacity and a ground bin that held 450 barrels. Stone aggregate up to 2½ inches in size, plus sand, came by rail from Chandlers Materials Co., Inc., Tulsa, Okla. Cement was supplied by the

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION

The First Name in

Hoists Carpullers

to learn more about this quality hoisting equipment, write for bulletin H 414

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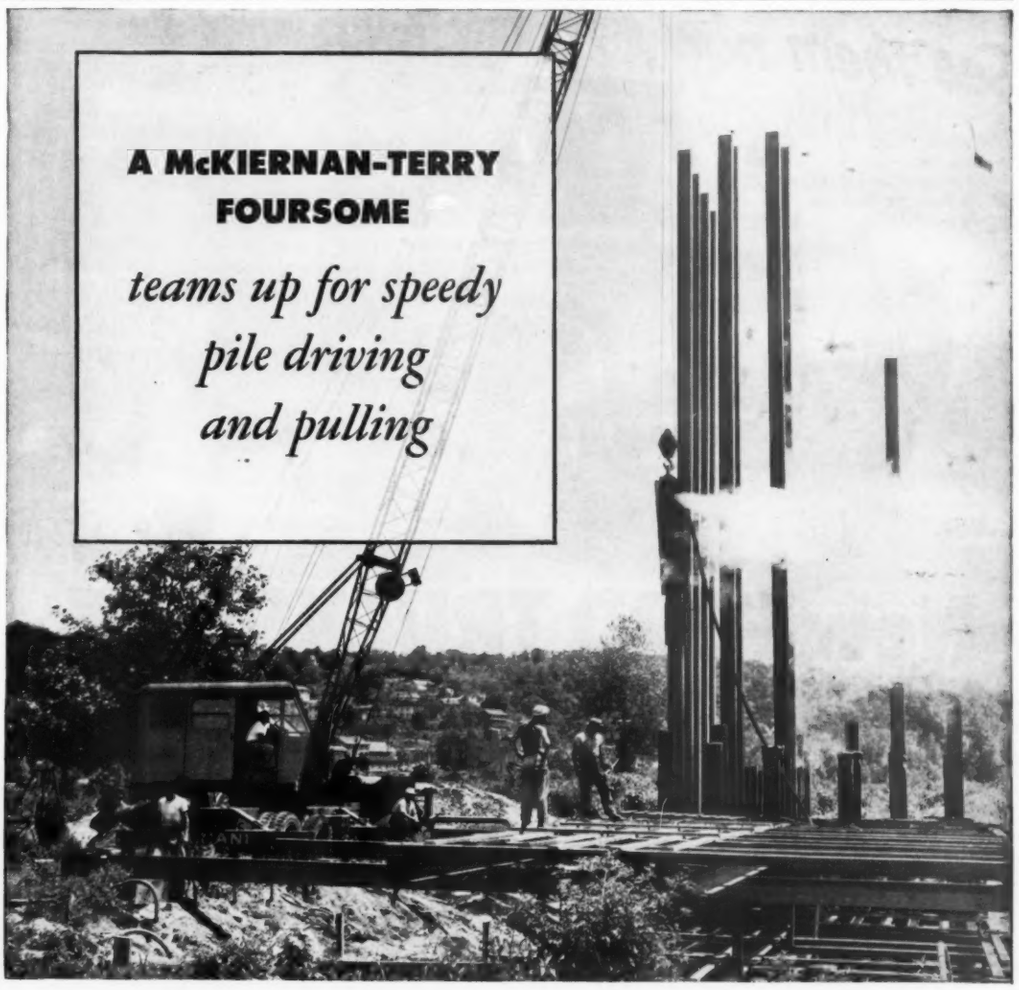
A McKIERNAN-TERRY FOURSOME

teams up for speedy pile driving and pulling



Here's bridge-building teamwork . . . McKiernan-Terry style! On the new Housatonic Bridge connecting Derby and Shelton, Conn., four pieces of McKiernan-Terry equipment were teamed up by the contractor for fast pile driving and extracting.

McKiernan-Terry 9-B-3 and 10-B-3 Double-Acting Hammers drove 40 to 65 feet steel piles to refusal in rock for four piers and the east abutment. Piles were punched down on a 1 in 6 batter from large crane rigs.

Cofferdam steel piles, 40 feet in length, were driven by a McKiernan-Terry Double-Acting No. 7 Hammer and quickly removed with a McKiernan-Terry E-4 Pile Extractor.

You, too, can get all the pile-driving versatility you need with the wide range McKiernan-Terry line. It includes 16 sizes of single-acting and double-acting hammers and 2 sizes of double-acting extractors. Write for bulletin.

A McKiernan-Terry Pile Hammer driving steel foundation piles for the Housatonic River Bridge from the 80-ft boom of a truck crane. Mariani Construction Co. was the contractor.

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS
19 PARK ROW, NEW YORK 38, NEW YORK
Plants: Harrison N.J. and Dover N.J.

Portland Cement Co. in Dewey and also came in by rail.

Concrete was mixed and moved to the forms in a fleet of transit mixers —three 4½-yard Smiths, two 3-yard Jaegers, and a 3-yard Challenge— mounted on International trucks. Each cubic yard of cement contained six sacks of cement and 5½ gallons of water.

The transit mixers went to the beginning of the forms, backed up to the paving operation, and dumped their loads. In this way, with the mixers dumping from within the lanes, a continuous longitudinal joint was possible. The mixers worked in pairs, one in each lane. A Jaeger-Lakewood finishing machine, with three Jackson vibrators mounted in front to provide extra agitation, was used. The concrete was belt-finished and cured with Hunt Process Clear.

Expansion joints were at 120-foot intervals and were full depth. The transverse contraction joints were 20 feet apart and were indented with steel bars. The longitudinal joint dowels were ½ x 30 inches on 30-inch centers, while the transverse joints used 1 x 12-inch dowels on 12-inch centers.

The expansion joints had a cork filler under the latex rubber compound topping. The rubber compound was heated in an Aeroil Heet-Master which was towed behind a pickup truck. One boiler held 50 gallons of oil, which was used to melt the latex. The operation required two men.

Kerosene at from 20 to 40 pounds pressure was used to fire the burner. The oil was heated to between 300 and 400 degrees F and transmitted heat to the second boiler which contained the rubber compound. While one man watched the heat and turned the hand-operated agitator, the other poured the fluid latex into the joints from a special container which had a valve on the bottom operated from the handle. The container was filled directly from the Heet-Master.

Approximately 18,000 linear feet of concrete curb was used on the job. There was 36,671 square yards of 8-inch and 42,705 square yards of 7-inch concrete paving.

C. A. Stoldt is director of the Oklahoma State Highway Department. G. H. Bittle is chief engineer; J. J. Stobaugh, Jr., is construction engineer; S. H. Shelden is resident engineer; and Fern Ford is project inspector. Herman Groclose was the superintendent for the Gillioz Construction Co. THE END

New Construction Boot

■ An 8-inch lace boot for construction workers is announced by the Red Wing Shoe Co., 103 Main St., Red Wing, Minn. The boot is made of brown retan leather and features sweat-proof leather insoles.

A wedge-type cushion crepe sole and heel is used. Although this new sole is light in weight, it is said to be durable and to provide a natural arch support.

For further information write to the company, or use the Request Card at page 18. Circle No. 730.

Hydraulic Cranking Motor

■ A folder describing a hydraulic cranking motor for diesel and gasoline engines is available from the Rucker Co., 4228 Hollis St., Oakland, Calif. Advantages of the Hydrotor listed include dependable cranking at all temperatures in all climates and higher cranking speed with less bulk and weight.

The new unit is made entirely of aluminum and bronze and is said to require a minimum of maintenance. It may be used with either a recharging or hand pump, and its speed may be adjusted as desired.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 772.

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Tandem-Axle BIG JOB.
New 170-h.p. *Cargo King* V-8. New Power Steering standard.

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The half-track on this Allis-Chalmers WD tractor is made by the Arps Corp.

Line of Half-Tracks Fits More Tractors

■ The availability of its half-tracks for a larger number of tractor models is announced by the Arps Corp., New Holstein, Wis. The half-tracks are now made for the Allis-Chalmers WD and WD45; the Oliver 66 and 77; the International Harvester Super H, Cub, and Super A; the Fordson Major; and the John Deere 40, 50, 60, and 70 tractors.

The company has been making half-tracks for Ford, Ferguson, Allis-Chalmers B and CA, International Harvester Super C, and Case Series VA tractors.

The half-tracks are furnished in both all-steel and rubber-belted construction. The all-steel type is designed for use in normal soils, while the rubber-belted model is preferable in sandy, abrasive soils. The tracks are recommended for such jobs as backfilling, leveling, landscaping, loading, snow plowing, heavy equipment hauling, and bulldozing.

For further information write to the company, or use the Request Card at page 18. Circle No. 750.

New Device Prevents Reversal of Conveyor

■ An enclosed roller-type hold-back that prevents reversal of bucket elevators and inclined conveyors due to power failure under load is made by the Standard Products Division of the Stephens-Adamson Mfg. Co., 23 Ridgeway Ave., Aurora, Ill. It consists of an inner member that has wedge pockets for six hardened rollers and rotates with the shaft.

When the shaft attempts to reverse, the rollers wedge against an outer cylinder. Pressure springs and plungers make for instant engagement of the rollers. The hold-back releases instantly when forward motion of the shaft is resumed.

The hold-back mounts directly on the drive shaft with the torque arm bolted to a support with sufficient strength to resist the load exerted when reversal occurs. Maximum torque resistance ranges up to 350,000 inch-pounds for units with a maximum bore of 7 inches.

For further information write to the company for Bulletin 444X, or us the Request Card at page 18. Circle No. 721.

Decimal Equivalent Card

■ A pocket-size red and black decimal equivalent card is offered by the South Bend Lathe Works, 114 E. Madison St., South Bend 22, Ind. The handy chart, measuring 3⅜ x 5½ inches, lists decimal equivalents of fractional parts of an inch to six places. There is no charge.

To obtain the device write to the company, or use the Request Card at page 18. Circle No. 769.

IF IT'S A

WET JOB

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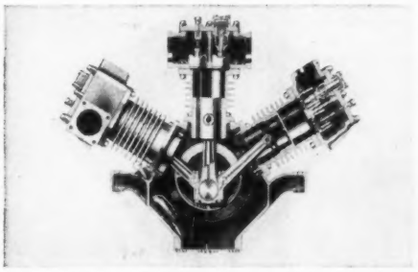
How long since you checked your compressor's fuel consumption?

These figures will show you how Worthington Blue Brutes may save you as much as 1500 gallons of fuel during an average operating year

COMPRESSOR SIZE	ENGINE TYPE	GALLONS OF FUEL PER HOUR AT 80 PSI	GALLONS OF FUEL PER HOUR AT 100 PSI
60'	GASOLINE	1.31	1.42
105'	GASOLINE	2.16	2.35
	DIESEL	1.66	1.73
160'	GASOLINE	3.18	3.44
	DIESEL	2.45	2.60
210'	GASOLINE	4.32	4.70
	DIESEL	2.89	3.06
315'	GASOLINE	6.25	6.75
	DIESEL	4.38	4.64
600'	DIESEL	6.30	9.20

HOW DOES YOUR COMPRESSOR STACK UP in comparison with the Blue Brute for fuel economy? The figures shown have been determined under normal field operating conditions.



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PLENTY OF RESERVE HORSEPOWER is standard with the Blue Brutes It takes thousands of hours of normal operation before engine wear affects the compressor's output This means you get full-rated output even though the engine hasn't been in the shop for a long time

Get the rest of the Blue Brute story from your nearest Worthington distributor Or write to Worthington Corporation, Construction Equipment Division, Section H 3 5, Plainfield, N J

WORTHINGTON

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB H.3.5

ROCK DRILLS • WAGON DRILLS • PAVERS • CONCRETE MIXERS • PORTABLE PUMPS

A Bay City CraneMobile unloads structural steel from railroad flatcars. *C. & E. Photo*

From Farm to Factory in Eight Months

Modern assembly plant is turning out refrigerators on 180-acre site where Indiana farm stood last May

FROM A PEACEFUL FARM to a modern assembly plant, in the space of eight months, is the evolution of a 180-acre tract of land on the outskirts of Connersville, Ind. Ground was broken May 26, 1953. By the end of July, most of the grading, footings, and underground installations were completed. A month later, the steel skeleton was almost finished. Final touches were made on the project last month.

The Rex Mfg. Co., a wholly owned subsidiary of Philco, is turning out Philco refrigerators and freezers in the new plant. Giffels & Vallet, Inc., Detroit, Mich., designed the plant and supervised its construction. A. J. Glaser Co., Inc., Muncie, Ind., was the general contractor.

Located in east-central Indiana, the plant consists of a one-story building, 420 x 810 feet, with a 60 x 140-foot two-story office building attached. A boiler building, 60 x 85 feet, houses three Babcock & Wilcox oil-fired boilers which produce steam for heating and processing.

The plant has a structural steel framework supported on individual concrete footings and covered with protective metal siding. The main floor is a 6-inch reinforced-concrete slab laid on a granular soil base. A mezzanine floor along one side and the two ends of the structure has a Flexicore floor supported on a steel framework.

Taking advantage of the generous area of the plant site, a 500-car parking lot was constructed for employees and visitors. The lot measures 300 x 600 feet and is surfaced with a plant-mixed bituminous surfacing over a crushed-stone base. The main-entrance road to the plant has a concrete pavement 8 inches deep in the center and thickened to 11 inches at the edges. Other plant roads consist of 2½-inch plant-mixed bituminous surfacing over 8-inch stone bases.

Grading the Site

Although the land was relatively level, approximately 100,000 cubic yards of earth was moved in the grading operation. A fleet of five Tournapulls assisted by an International TD-24 pusher and a Caterpillar D8 tractor and dozer first removed the vegetation and topsoil. Material not needed for the landscaping was wasted at the rear of

practical pointers...
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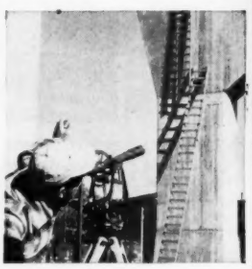

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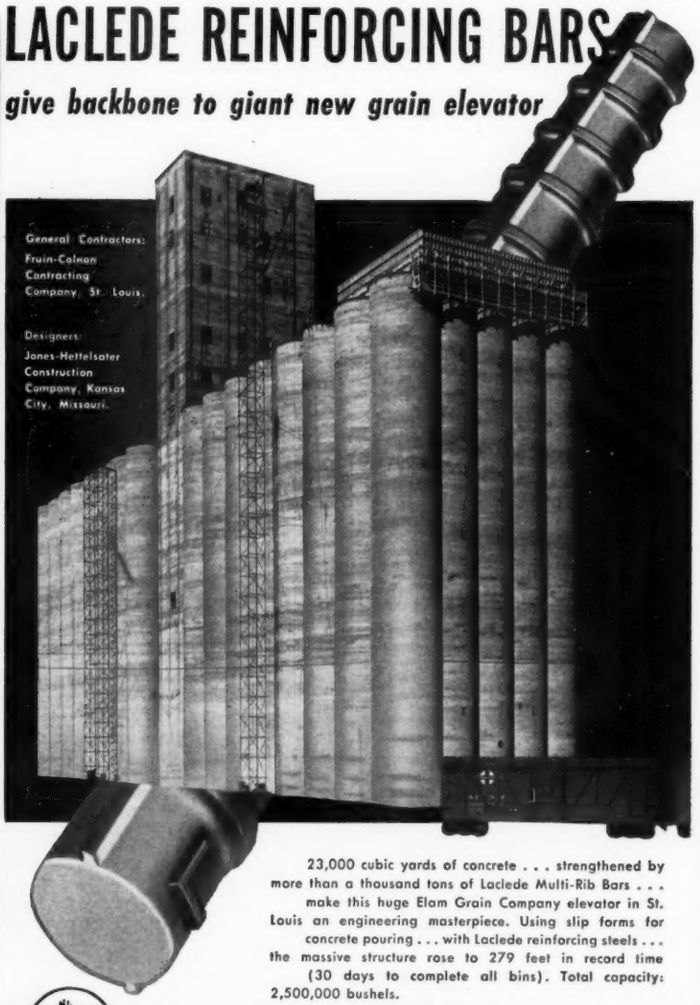

23,000 cubic yards of concrete . . . strengthened by more than a thousand tons of Laclede Multi-Rib Bars . . . make this huge Elam Grain Company elevator in St. Louis an engineering masterpiece. Using slip forms for concrete pouring . . . with Laclede reinforcing steels . . . the massive structure rose to 279 feet in record time (30 days to complete all bins). Total capacity: 2,500,000 bushels.

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Producers of Steel for Industry and Construction
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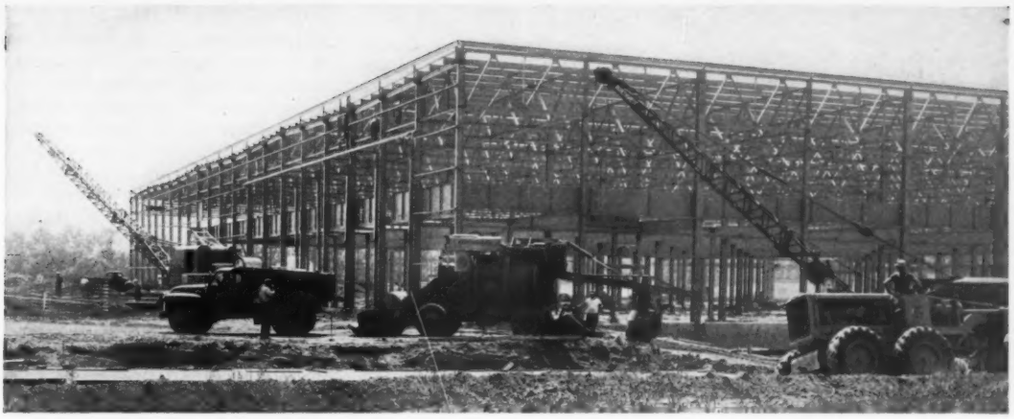

This is a general view of operations two months after ground was broken. A GMC batch truck pulls away from the Koehring 16E Twinbatch paver. *C. & E. Photo*

the property or used to build dikes for a storm-water retaining pond, a job subcontracted to Debolt Construction Co., Inc., Richmond, Ind.

The sandy subsoil was readily brought to grade and furnished excellent drainage for surface water. Even heavy rains seeped into the ground in a short time, making it unnecessary to pump out any footing holes and minimizing delays caused by wet weather. When the site had been brought to grade, Glaser's Northwest Model 25 cranes moved in and dug holes for the footings. The cranes, with Owens clamshell buckets, cast enough of the material for use in backfilling, loading the remainder into GMC dump trucks to be hauled to the disposal areas.

The pouring of the concrete footings and piers followed closely after the excavation. As soon as the forms were removed, a Caterpillar D4 tractor with a Trackson front-end loader carefully backfilled and compacted around the piers. As soon as one row was completed, the area was straightened up and put to finish grade by a Caterpillar No. 12 motor grader. The gravel backfill around the piers was thoroughly inundated.

Sewer System

While the footings were being prepared, Thompson Construction Co., Inc., Indianapolis, Ind., installed the underground storm, process, and sanitary sewer systems. Sanitary sewer mains and water lines were run out to the plant site by the city of Connersville under contracts separate from the plant construction. Included in the city's work was a new municipal sewage treatment plant and a trunk sewer system.

Roof and yard drainage, and other water not going into the sanitary sewer system, is conducted through a network of storm drains to the retaining pond adjacent to a creek at the rear of the property. The 200 x 600-foot pond is about 9 feet deep and stores approximately 620,000 gallons of water per foot of depth. Earth dikes retain the water, which is released into the creek through a manually operated gate in quantities the stream can absorb.

The sewer system consists of pipes from 8 to 54 inches in diameter. The smaller ones are vitrified

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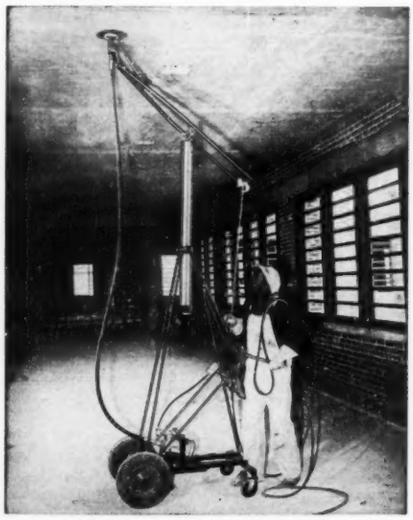

For Ceilings Up To 12 Feet

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- CHEAPER AND BETTER: Money saved on finishing will help pay for grinding.
- DEPENDABLE: Individual GIRAFFES have worked more than 1,000,000 square feet without major overhaul.

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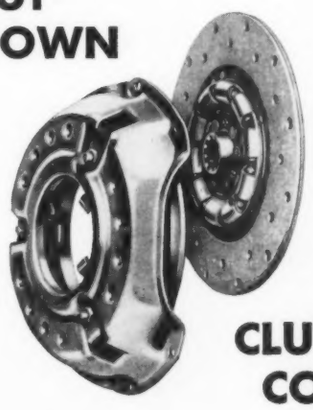

ROCKFORD clutch engineers are helping product designers reduce costs — by making possible *quicker clutch assemblies, easier clutch adjustments,* and *after-sale clutch service unnecessary.* Because ROCKFORD CLUTCH precision, capacity and stamina are greater than ever, product owners' up-keep costs are lower. Now is the time to have ROCKFORD clutch engineers give *your product* the benefits of lower clutch costs plus competitive operating advantages.

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Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

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ROCKFORD CLUTCHES

A self-unloading Trailmobile bulk-cement transport, pulled by a White truck, unloads its 108-barrel load into the Erie batching plant. *C. & E. Photo*

clay tile and the larger are reinforced concrete. The 10,000 feet of trench was dug by Insley and Lorain draglines, which were also used to lower the heavier pipe sections. An International tractor with a front-end loader backfilled the trenches after the pipe was placed.

Concrete Construction

The Erie cement plant consisted of two storage tanks with a capacity of 450 barrels each. The receiving hopper was adapted to bulk truck deliveries. A bucket elevator carried the cement to the upper tank, with the overflow spilling into the lower one. Cement was received from the Southwestern Portland Cement Co., Fairborn, Ohio, in Trailmobile self-unloading cement trailers pulled by White trucks and operated by Schwerman Service. These trailers carried 108 barrels of bulk cement per load.

Aggregate was produced by local firms and hauled to the site by Glaser. It was batched through a two-compartment 75-ton Butler bin. A Northwest Model 25 crane with clamshell bucket charged the hopper. Trucks hauled both aggregate and cement to the paver.

Paving

The Koehring 16E Twinbatch paver was new on this job. Its elevating boom made possible pours from the paver bucket as high as 21 feet above ground level. Mounted on six rubber tires, the machine moved quickly and easily around the site as required. Places inaccessible to the paver were poured with the use of Scoot-Cretes carrying ½-yard loads of concrete.

All concrete was designed for a compressive strength of 3,000 psi. A typical batch contained 494 pounds of cement, 1,380 pounds of sand, 2,020 pounds of rock, and about 31 gallons of water. Pozzolith was added to the mix for roadway paving slabs. Pours of between 200 and 300 cubic yards per day were not uncommon; the total amount of concrete used was approximately 14,000 cubic yards.

Structural Steel

Indiana Bridge Co., Inc., Muncie, Ind., furnished and erected the structural steel framework. Steel was received at the site by rail and was unloaded into storage areas by two Bay City CraneMobiles. From the storage yard, the steel members were trucked to the point of erection and placed by the same two truck cranes. The total quantity of steel was approximately 2,500 tons.

Personnel

J. L. Smith, plant engineer for the Rex Mfg. Co., represented the owners at the project. B. Giffels was project engineer for Giffels & Vallet, Inc. G. J. Borgman was resident superintendent. General superintendent for A. J. Glaser Co., Inc., was J. H. Stonebraker. THE END

Surveying Prism Device Eliminates Transitman

■ A device consisting of a double pentagonal prism enables two men to make up a property surveying party, according to the Geo-Optic Co., Inc., 170 Broadway, New York 38, N. Y. The prism eliminates the necessity of having a transitman on the job when the property surveying party works on flat or gently sloping ground. This also holds true when the party works on problems containing measurements of few angles other than those of 90 or 180 degrees.

The double pentagonal prism, about the size of a plumb-bob, is a combination of two pentagonal right-angle prisms, set one above the other. The device is held in the right hand, and the observer looks into two windows set at the front. Rays coming from either side emerge to the observer on 90-degree angles. When standing exactly on a line that is defined by range poles at each end, the observer sees the poles as forming a straight line, one under the other. All measurements on a property survey involving 90 or 180-degree angles can be made by the two-man party.

For further information write to the company, or use the Request Card at page 18. Circle No. 794.

U. S. Rubber News

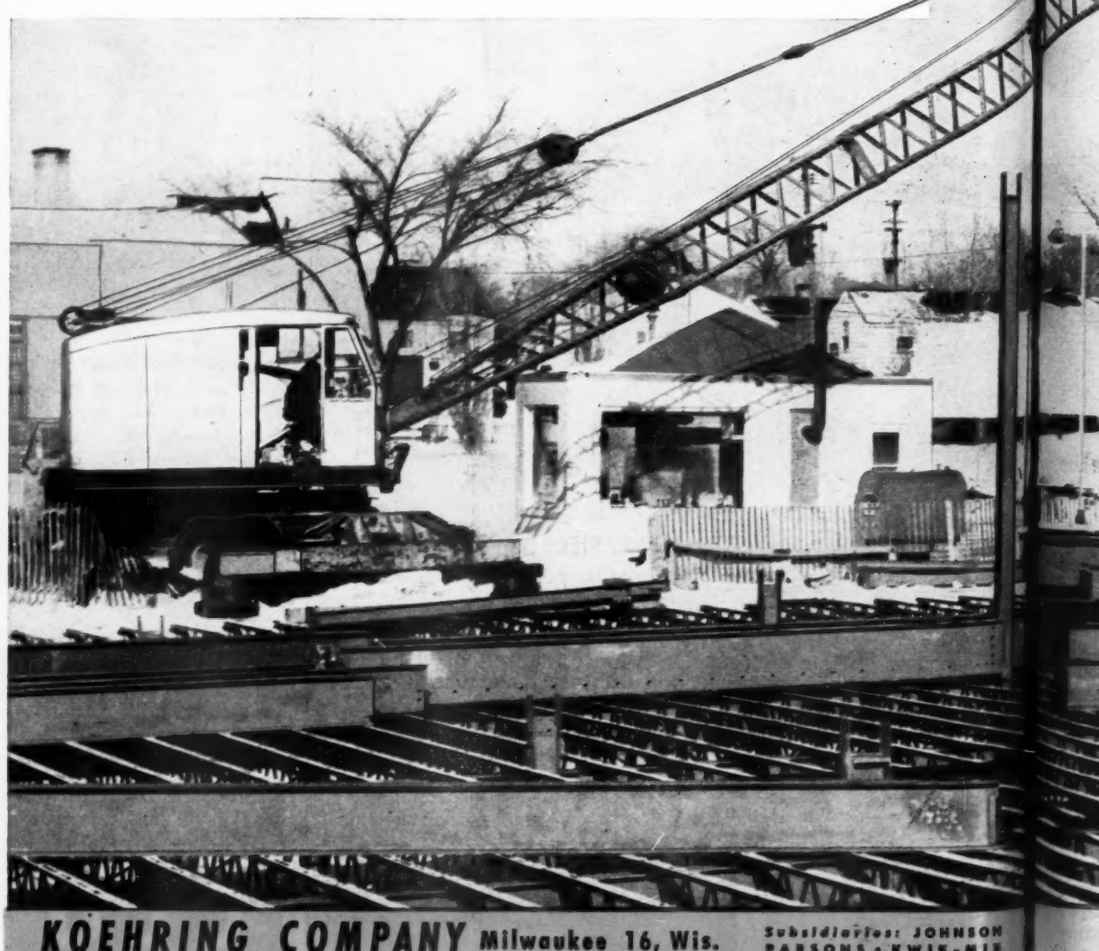
Douglas K. Bonn has been named by the U. S. Rubber Co., 20 Rockefeller Center, New York 20, N. Y., to head its government department in Washington, D. C. Formerly assistant in the department, he succeeds the late Joseph E. Mathie.

pick up bigger payloads

with "KOEHRING WORK CAPACITY"

Big payload performance of Koehring cranes and excavators can be measured very quickly. Take a look at lift capacities, for example. Obviously, the machine with the heaviest lift capacity will not only pick up larger crane loads, it also has more power and stability to increase shovel and hoe production — handles bigger dragline and clamshell buckets on a wider work range.

Be sure to check lift ratings and other clear-cut measurements of "KOEHRING WORK CAPACITY" before you buy any crane or excavator. See your Koehring distributor for all the facts.



KOEHRING COMPANY Milwaukee 16, Wis. Subsidiaries: JOHNSON PARSONS • KWIK-MIX

Compound Power Units

■ Compound power units consisting of two gasoline engines mounted side by side on skids are illustrated in literature from the Continental Motors Corp., Muskegon, Mich. The units deliver their power output through a roller chain to a common shaft. Speed is regulated by a Continental-designed vacuum equalizer to split the load so that a single throttle keeps both engines in perfect synchronization. A mechanical or pneumatic clutch is part of the unit. Various ratios between engine speed and final takeoff speed are available.

The Continental Red Seal compound power units provide power for a variety of construction needs. They are available with 242 to 363 hp at 2,400 rpm. A table of specifications and a graph of performance characteristics are included in the literature. Engineering drawings show construction details.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 723.

Snowplow Controls

■ A booklet covering the company's hydraulic snowplow controls is available from the National Lift Co., Ypsilanti, Mich. The chief feature of the Snowlift controls is the fan-belt-driven hydra-clutch pump that provides hydraulic power for the controls. The pump draws only 3 hp and leaves the power takeoff opening free for other uses.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 781.

The new Type T asphalt plant announced by Hetherington & Berner features an all-welded mixing tower for greater stability and resistance to vibration.

New Mixing Tower Is Entirely Welded

■ An improved type of mixing tower in which the structure is entirely welded is announced by Hetherington & Berner, Inc., 700 Kentucky Ave., Indianapolis 7, Ind. Through the use of welded plate construction, much of the bracing and miscellaneous loose pieces have been eliminated.

Another feature reported by the manufacturer is self-contained overflows in the bin. The dust bin is also self-contained and an integral part of the bin structure. The location of the filler dust bin makes it possible to eliminate the screw conveyor normally used to feed dust into the aggregate weighbox.

The design of the plant, the manufacturer reports, provides adequate working space and platforms on the plant with a minimum of extra pieces to move. In addition, the welded construction is said to be more stable and resistant to vibration than the riveted construction.

The new plant is available completely wired with all units driven by individual electric motors, with gasoline or diesel engines on the main units and electric drives on the smaller units, or with gasoline or diesel drive throughout. Four sizes are available in capacities from 60 to 160 tons per hour. All are equipped with the new type Deister flat screens. There are provisions for a fugitive-dust system which collects dust ordinarily escaping from the elevator, screen, and weighbox. A secondary collector may also be obtained.

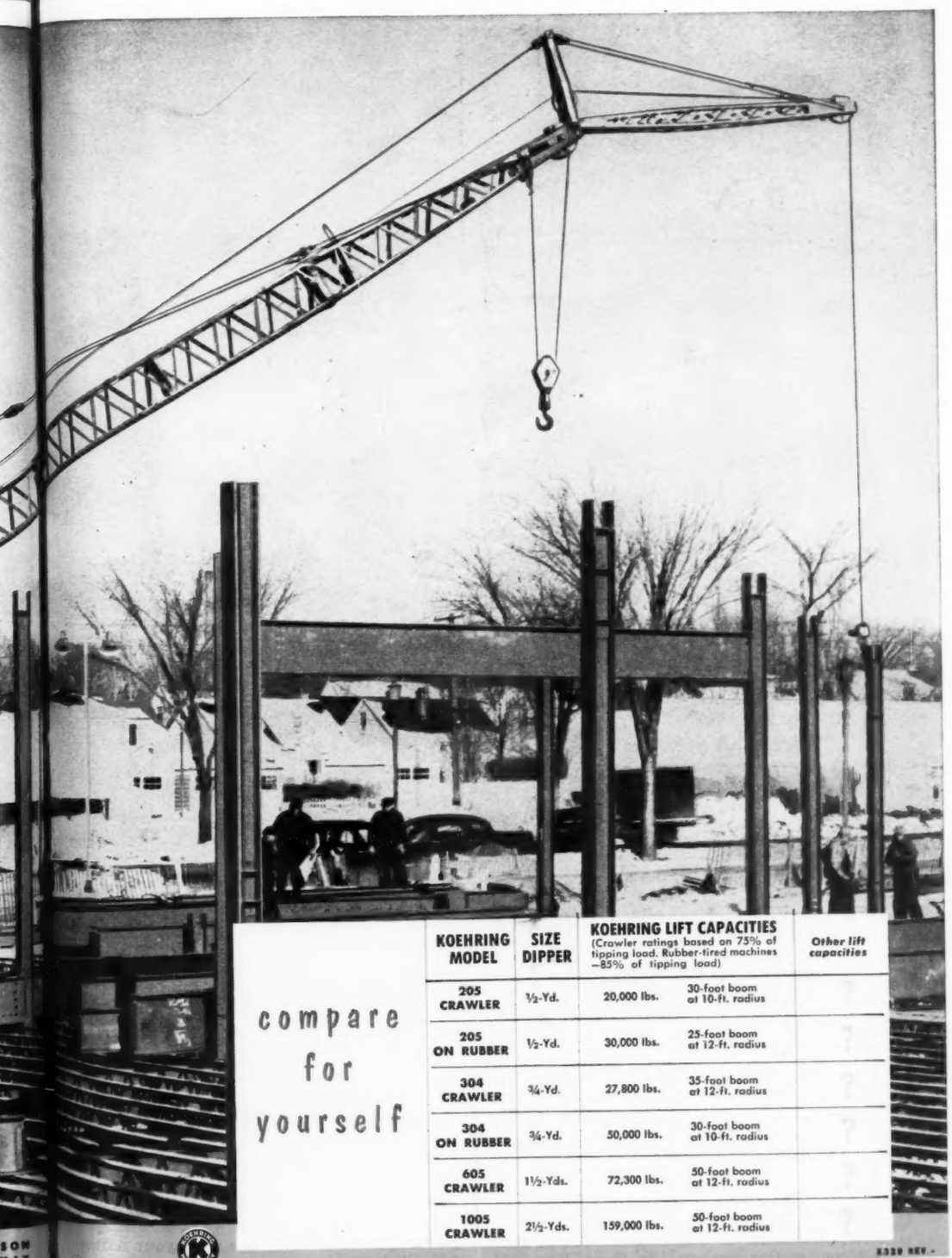
For further information write to the company, or use the Request Card at page 18. Circle No. 736.

Powered Stud Fastener

■ A portable powder-actuated tool for driving steel studs into steel, concrete, or masonry is described in a bulletin issued by the Velocity-Power Tool Co., 201 N. Braddock Ave., Pittsburgh 8, Pa. The tool is used for fastening steel to steel, steel or wood to concrete, and facing materials to a variety of supports. It eliminates the slow work of drilling, plugging, and anchoring of studs.

Blank cartridges are used to drive the steel studs neatly in a single and simple operation. Cartridges employed are .32 and .44 caliber. They are of the center-fire type for safety and are offered in a series of loads for different applications. Cartridge, piston, and stud are factory-assembled into an integral unit to avoid mismatching of loads and studs. The cartridge heads are painted in key colors to identify the loads. Interchangeable barrels are available for driving ¼ and ⅜-inch studs.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 755.



KOEHRING MODEL	SIZE DIPPER	KOEHRING LIFT CAPACITIES (Crawler ratings based on 75% of tipping load. Rubber-tired machines —85% of tipping load)		Other lift capacities
205 CRAWLER	½-Yd.	20,000 lbs.	30-foot boom at 10-ft. radius	
205 ON RUBBER	½-Yd.	30,000 lbs.	25-foot boom at 12-ft. radius	
304 CRAWLER	¾-Yd.	27,800 lbs.	35-foot boom at 12-ft. radius	
304 ON RUBBER	¾-Yd.	50,000 lbs.	30-foot boom at 10-ft. radius	
605 CRAWLER	1½-Yds.	72,300 lbs.	50-foot boom at 12-ft. radius	
1005 CRAWLER	2½-Yds.	159,000 lbs.	50-foot boom at 12-ft. radius	

K329 REV.-

Stewart-Warner's new Portafone two-way radio hand set.

Portable Transmitter And Radio Receiver

■ A portable radio transmitter-receiver for two-way communication and a battery-powered megaphone for distances up to a quarter of a mile has been announced by Stewart-Warner Electric, 1826 Diversey Parkway, Chicago 14, Ill. The radio "transceiver", called the Portafone, combines a transmitter and receiver in one instrument similar in appearance to a telephone hand set. The instrument weighs only 28 ounces by itself and 5½ pounds with battery and carrying case. It is sold in pairs.

While full performance data awaits more extensive field use, the ½-watt Portafone is described primarily as a line-of-sight radio which can be used to coordinate operations over a limited area. The chief advantages offered are low first cost and light weight. Operating in the citizens' radio band at a fixed frequency of 465 megacycles, the equipment requires an FCC station license but not an operator's license. Any adult citizen may obtain the license by filling in an application that comes with the radio set.

The power megaphone is a hand-held device consisting of a microphone, a powerful speaker, and batteries in a single unit for amplifying the voice. It weighs 5 pounds 5 ounces and is powered by six flashlight batteries. It operates instantly with a trigger switch in the handle.

For further information write to the company, or use the Request Card at page 18. Circle No. 731.

Wear-Resistant Parts Of Manganese Steel

■ The complete line of construction machinery parts made of manganese steel castings by the American Manganese Steel Division of the American Brake Shoe Co., 389 E. 14th St., Chicago Heights, Ill., is described in a general catalog from the company. Typical castings are shown in photographs, and applications are listed.

The booklet also contains a complete discussion of the impact and abrasion-resistant characteristics of Amsco 13 per cent manganese steel under each product category. There is detailed information on power shovel dippers, teeth, chain, gears, sheaves, crusher parts, and dredge and material-handling pumps.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 741.

Oiler and Filter Attaches to Air Lines

■ A filter and lubricating device that is installed on air lines to provide lubrication in vapor form is made by the Air-Speed Tool Co., 1502 W. Slauson Ave., Los Angeles 47, Calif. Designed without moving parts, the device is used for long term lubrication of air tools and equipment. The lubricator fits any machine or air tool line. Any good oil up to SAE 30 may be used.

In the Model LC, harmful particles of rubber, dirt, scale, and water are removed from the air before they enter the tool. The filter section is cleaned by removing the plug and turning on the air, blowing the dirt out. The air passes by the feeder outlet, not through it, so that the line does not have to be shut down to refill the oil reservoir. A non-breakable window allows the oil supply to be seen. The device is also available without the filter element.

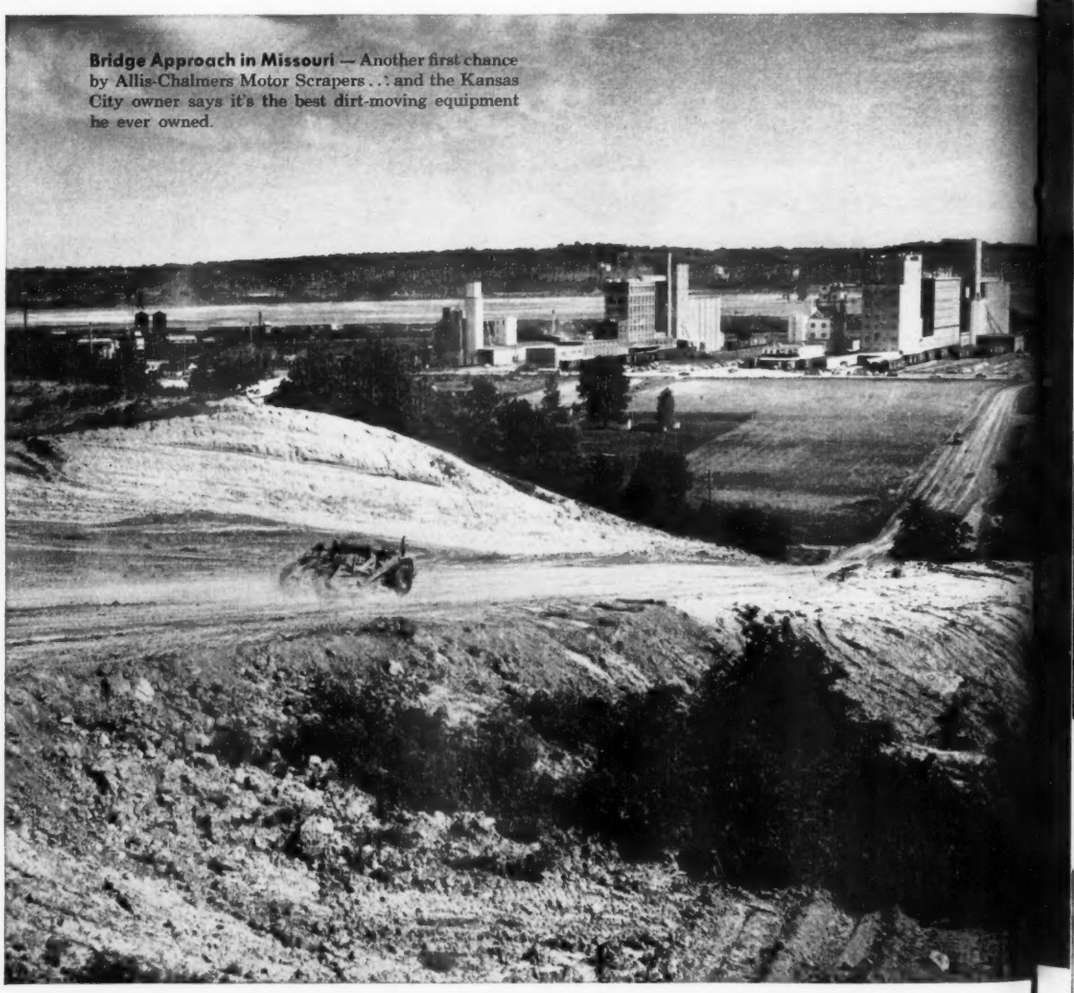
The Williams pneumatic lubricator, shown with and without a filter, will fit all standard-size air lines. Constructed of aluminum, the device has no moving parts.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 747.

Catalog on Boilers And Water Heaters

■ A new catalog that features high and low-pressure steel boilers is available from the Kewanee-Ross Corp., Kewanee, Ill. Data on boiler support brackets, structural steel suspension, and induced draft fans for the company's boilers is included. The brochure also has descriptions of water heating products, both direct fired and storage types, as well as indirect water-heating coils.

To obtain this literature write to the company, or use the request Card that is bound in at page 18. Circle No. 729.



Bridge Approach in Missouri — Another first chance by Allis-Chalmers Motor Scrapers . . . and the Kansas City owner says it's the best dirt-moving equipment he ever owned.

Today's Contractors are Keen Judges of Equipment

On earth-moving jobs all over the country, design, performance and service features that were once taken for granted are now getting a careful look . . . because even one extra yard per load, one extra mph. on the haul road can make a big difference when it comes to staying within bidding estimates.

That's why you see Allis-Chalmers Motor Scrapers and Motor Wagons on more and more big construction projects like those illustrated here. Cost-conscious, profit-conscious contractors have analyzed them, used them and have satisfied themselves that Allis-Chalmers Motor Scrapers have what they need to help them win bids, stay on schedule and make a profit when they are through with the job.

If you have your sights set on some close-margin, hard-to-get business, we *know* it will pay you to go over *all* the facts with your nearby Allis-Chalmers dealer.

Mounted Tooth Pulls Stumps and Trees

■ Stump and tree removal is the specialty of the Fleco cable-operated Pull Stumper designed for installation on track-type tractors. The Pull Stumper has a single tooth made of a one-piece steel casing and built to withstand high stress at the point. The base of the tooth is drilled with a series of four holes in a vertical line to allow for variation in the depth of penetration. Depth of penetration is 24 to 36 inches for two models that fit the Caterpillar D7 and D8 tractors and 24 to 30 inches on a unit for the D6. Forward pull on the stumper comes directly from the tractor drawbar.

The A-frame of the Stumper is designed for easy attachment and allows full vision for the operator.

The Fleco tractor-mounted Pull Stumper for right-of-way clearing.

When not in use, the Stumper is raised to a vertical position where it is out of the way and permits freedom of operation of the tractor with bulldozer equipment. If desired, the pins in the drawbar and circle can be removed, the cable disconnected, and the Stumper frame and adapter detached from the tractor. A rear cable-control unit is required to raise and lower the Stumper.

One of the advantages of the Pull Stumper is that it can cut lateral roots of large trees and stumps as a first step in their removal. It can also be used as a single-tooth ripper on certain types of operations.

For further information write to the Fleco Corp., P. O. Box 2370, Jacksonville, Fla., or use the Request Card at page 18. Circle No. 749.

New Hydraulic Crane Lifts and Carries Load

■ The recently announced Austin-Western hydraulic crane described as a combination truck crane and material-handling unit is now illustrated in literature. The tractor-mounted crane, with its pickup, carrying, and placement capabilities, has turntable rotation, boom elevation, raising and lowering of cable and hook, and power extension and retraction of the boom. The boom rotates 360 degrees, and there is a 24-foot horizontal reach from the center of rotation and a 24-foot vertical lift from ground level to the hook.

The unit can negotiate grades up to 20 per cent and can travel up to 15 mph on the road under full load. Over-all height of the machine is 9 feet, and width is 8 feet.

The literature shows typical indoor and outdoor uses for the crane. The basic crane structure can also be used as a stationary installation or it can be mounted on a small dolly. In addition, it can be installed on almost any truck of sufficient tonnage. Outriggers are added to prevent frame distortion and to give sufficient stability. The manufacturer is now planning a complete line of attachments for the unit, including clamshells, magnets, fork lifts, loaders, bulldozers, and snow plows.

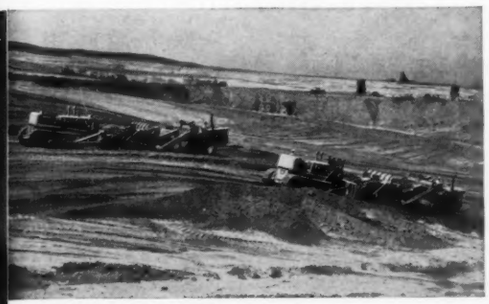
To obtain this literature write to the Austin-Western Co., 601 Farnsworth Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 696.

Data on Mobile Radios

■ Literature on mobile radio equipment is available from the Radio Corporation of America, Front and Cooper, Camden 2, N. J. The two RCA Mobile Carfone radios described operate in the 152 to 174-mc band and are designed for two-way communication.

Bulletin C.3011 gives details on a 30-watt transmitter and receiver unit supplied for 6 or 12-volt battery operation. A second compact unit combining transmitter and receiver in a single steel case that can be installed in any convenient location in a vehicle, is described in Bulletin C.30. This is a 15-watt 6-volt radio.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 700.



Housing Project in California — Here, six big TS-300's and their HD-20 partners team up at the Westlake job near San Francisco . . . for a contractor moving over 8,000,000 yards in the last five years.

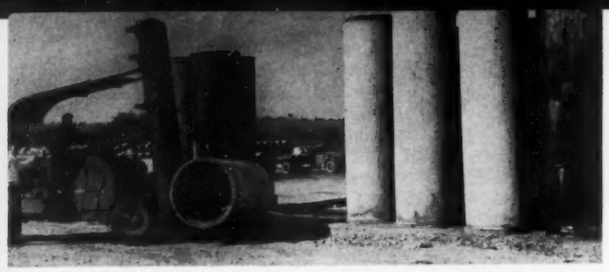
Runway Extension in Tennessee — This TS-300 is the first Allis-Chalmers equipment this contractor has ever owned, but it earned a regular spot fast by high-balling capacity loads like this trip after trip.

Dam-Building in Illinois — and the fleet color is Persian Orange. The 176 hp. TS-200's and HD-20's load smoothly, efficiently . . . and the TS-200 is rolling fast toward the fill the instant they break contact.

Railroad Bed in Montana — These TS-300's (14-yd. struck capacity; 18-yd. heaped capacity) averaged 14 trips an hour, excavating grade for a five-track rail bed at the site of a new aluminum plant.

Jet Base in Jersey — Silt and sand make this a tough job . . . but the extra power of the TS-300's, plus the HD-20's ability to exert full power at creep speeds, paid off in big yardage.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.



Lock Joint pipe is transported to the contractor's trailer-truck by a 16,000-pound Gerlinger carrier. Four 12-foot sections of pipe were brought to the job each trip.

Twin 36-Inch Pipe Laid Under River

Wellpoint system dewaters trench dug in river bed as dike holds back flow of water; job done in dry season

WITH FINGERS CROSSED and an eye on the horizon to detect any change in weather conditions, a Tulsa, Okla., joint-venture firm has laid 1,900 linear feet of dual 36-inch reinforced-concrete pipe under the Arkansas River to connect Tulsa's sewage system on the east bank with the city's new sewage disposal plant on the west bank. The project was accomplished with the aid of a trail dike to hold back the river.

Started on July 10, 1953, the job was completed in September. The 60 days required for the crossing were selected from the driest part of the season, as determined by a study of past records. The area was also experiencing a severe drought. But there was no guarantee that conditions would not suddenly change, and the weather was the most important factor.

Luck held out for the joint-venture firm of F. M. Stowell and H. J. Happel; the crossing was made without incident.

The job was started from the new disposal plant and worked toward the east bank. The crossing was located only 1,000 feet south of the new 51st Street Bridge which made the west bank easily accessible from town. Need for cofferdams and sheet steel piling was eliminated by the dike, which was clammed up from the river, diverting the water progressively toward the east bank. A cut was made in the embankment to handle the flow of the river. The water-bearing sand, in which the trench for the pipe was dug, was dewatered with a Moretrench wellpoint system.

One of the Gardner-Denver wagon drills used in the rock excavation is lowered into the trench. Two sections of pipe, surrounded by steel reinforcing, are visible in center background.

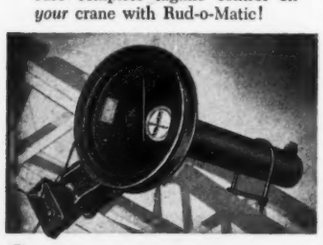
The completed dike contained more than 40,000 cubic yards of fill and was 150 to 200 feet wide. It was 6 to 8 feet above the low water line. Fill was excavated from the river by a Bucyrus-Erie 38-B with a 70-foot boom. A 2-yard Lorain with a 70-foot boom helped out on one side. When closure was made with the east bank, a channel was opened near the west bank.

The trench for the pipe was 6 feet deep, 60 feet wide at the top, and 11 feet wide at the bottom which

2 ways to make crane operations pay more

1 RUD-o-MATIC
Combination Magnet Reel-Tagline

Rud-o-Matic Combination Magnet Reel-Tagline saves expensive electric cable wear on overhead and boom crane jobs. Tension on the steel tagline cable keeps the strain from the expensive electric magnet cable. Now standard equipment with major crane manufacturers, the Rud-o-Matic Combination Magnet Reel-Tagline is made in five models to fit your present equipment. Insure complete tagline control on *your* crane with Rud-o-Matic!



2 RUD-o-MATIC
Tagline

Crane operations are more profitable when you install Rud-o-Matic Taglines. Heavy duty torsion coil spring keeps tension on tagline cable at all times for bucket control. Buckets are held steady at any angle of the boom. Available in 11 models for various bucket sizes and pull out requirements. Taglines delivered fully equipped with fairlead and cable attached—ready to install. Get more pay loads per day with *your* crane with Rud-o-Matic Tagline Control!

For full information on Rud-o-Matic Taglines, call or write—

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NO RAMMING OR JAMMING! NO SPINNING OF WHEELS WHEN LOADING BULKY OR "PACKED" MATERIALS

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DIGS IN WHILE STANDING STILL!

Check these Features!

- **STANDARDIZED PARTS.** Ford, Timken, Vickers, Bendix, etc., assure highest quality components and low-cost servicing.
- **SAFETY.** Operator has unrestricted visibility and is protected from loader arms.
- **EASY HANDLING.** Full reverse shifting gives LOAdALL four speeds forward and four reverse. Three simple, conveniently located hydraulic controls assure efficiency.
- **LOW COST.** You save on first cost, operating costs and maintenance costs with a LOAdALL.
- **LOAdALL BUCKETS.** Available with capacities of ⅜, ¾, ⅞, 1, 1¼ and 1½ yards.

A HIGHLY MANEUVERABLE POWER SHOVEL

Lessmann LOAdALL scoops up big loads of the most heavily compacted soils, cinders, aggregate, etc. . . . does it in 5 seconds while standing still! Extra hydraulic cylinders supply Hydraulic Power Crowd. This means *loading* with hydraulics which eliminates ramming and spinning of wheels . . . *minimizes repairs, reduces maintenance!* Dozer blade is easily attached for grading, backfilling. Crane-hook, lift forks, snow and trash buckets are also available.

9 FT. DUMPING CLEARANCE

LOAdALL has clearance for the highest trucks, bins and mixing hoppers. It loads or unloads at any height from 12" below wheel level to 108" above. Wheelbase of 73" and 12' turning radius make it highly maneuverable.

52" REACH

Here's a full 4'4" reach at maximum clearance! LOAdALL carries load close but quickly boosts it *'way out ahead* for easier loading . . . another advantage of Hydraulic Power Crowd.

HYDRAULIC POWER-CROWD

LESSMANN MANUFACTURING COMPANY
Affiliate of United Steel Barrel Co., Philadelphia—Wilmington, Del.
2002 Easton Blvd., Des Moines 4, Iowa

Write for Complete Information TODAY!

The Moretrench wellpoint system. The 1,400 feet of 8-inch header line was equally distributed on either side of the trench and connected to five 10-inch pumps which were in operation day and night.

was in a shale and rock formation. The excavated material that went into the dike was composed mostly of fine sand. It was removed from the trench line to the old river bottom and dumped on either side to strengthen the dike. The final 6 feet at the bottom was blasted out.

The project called for a high degree of coordination. All operations —dike embankment, trench excavation, pipe laying, pouring of the concrete blanket that covered the pipe—had to be closely integrated. The pipe laying was never more than a few feet behind the final trench excavation; the concrete pouring was never more than 12 feet behind the pipe laying. In this way, it would not have been too difficult to place some conduit in the first part of the dike to help the river get past the job in case of an emergency.

The 38-B also worked on the sand excavation in the dike. A 22-B was used to handle wellpoint lines, engines, and pumps as the drainage system was moved forward by taking equipment from the finished sections and placing it in the front.

Wellpoint System

The Moretrench wellpoint system consisted of 1,400 feet of 8-inch header line distributed 700 feet to each side of the trench and connected to five 10-inch pumps which were in operation night and day. The

(Concluded on next page)

TIGHT SEALS
FASTER APPLICATION

Servicised KORK-PAK**
CORRUGATED CLOSURE STRIPS

- FULLY RESILIENT
- RIGID . . . NON-SAGGING
- REQUIRES LESS FASTENING

KORK-PAK* Closure Strips assure tight seals because they won't sag, crack or shift—always remain in place, regardless of weather conditions. Asphalt bonded cork granules provide rigidity . . . maximum resiliency under compression. KORK-PAK weighs half as much as asphalt or rubber and reaches your job for approximately the same cost as asphalt. Try KORK-PAK on your next job. It provides a *better seal for less money.* Made for horizontal, vertical or beval closures on standard steel, aluminum or asbestos cement corrugated sheets.

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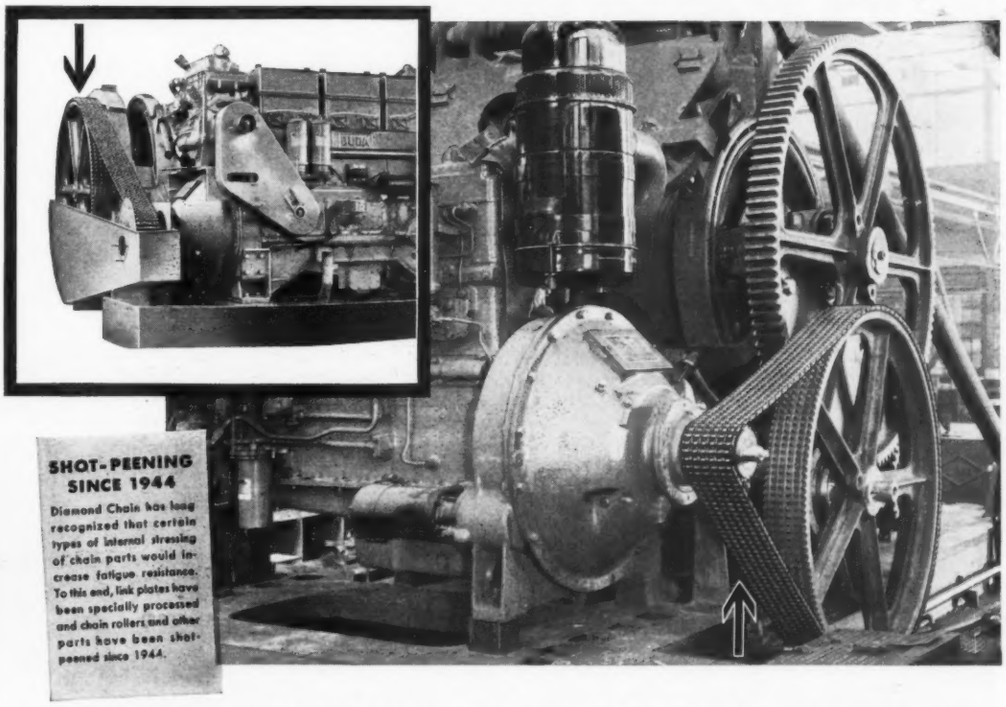
They have the Stamina for Power Take-Off Drives

Diamond Roller Chains

Provide Long-Life Dependable Performance . . .
No Slip or Stretch . . . 98-99% Maintained Efficiency



SHOT-PEENING SINCE 1944

Diamond Chain has long recognized that certain types of internal stressing of chain parts would increase fatigue resistance. To this end, link plates have been specially processed and chain rollers and other parts have been shot-peened since 1944.

• Diamond Roller Chains cut maintenance and adjustment costs. The toughened side plates of great reserve strength take the shock loads and tension;—the hardened finished surfaces of the rollers, bushings and pins resist wear for longer useful life. At high, medium or slow speeds, operation is smooth and quiet with exact speed ratio maintained.

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Where High Quality is Traditional
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Offices and Distributors in All Principal Cities
Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

DIAMOND ROLLER CHAINS

(Continued from preceding page)
points were placed on 5-foot centers and connected to the header through 2-inch leads. The water content was so high, the various 8-inch discharge lines which emptied into the river ran full most of the time.

Portions of the ditch were sandbagged and pumped, and three Ingersoll-Rand air-operated 2-inch sump pumps were constantly in use. Propane gas was used in the well-point engines. It was supplied from skid-mounted tanks which were serviced every three days.

The shale and rock bottom had the appearance of coal, but was hard and compact. Two Gardner-Denver wagon drills with 1⅛ and 2½-inch Timken detachable bits drilled 6-foot holes. About 50 holes were drilled and charged twice daily. Illinois 40 per cent gelatin dynamite was used. It was fired with one and two delay electronic detonators on each side of center-placed instantaneous shots.

Compressed air for the sump pumps and the wagon drills was supplied by a Chicago Pneumatic 210, a Gardner-Denver 315, and a Worthington 315.

The 36-inch reinforced-concrete pipe came from the Lock Joint Pipe Co. plant at Sand Springs, about 5 miles away. The pipe was cast in 12-foot lengths with a hole in the side for the insertion of a chain and bar for handling by the cranes. The joint was the conventional rubber ring lock-joint. A 16,000-pound Gerlinger carrier was used to load the pipe sections on the contractor's tractor-trailer, which transported four sections at a time.

A 2-yard Lima with a 75-foot boom, stationed on the embankment, alternated between placing pipe and handling the concrete bucket. After lengths were set to grade in the bottom of the cleaned-out trench, the steel reinforcing and the concrete was put in place. Steel was placed at the rate of 92 pounds per linear foot, while 1.26 cubic yards of concrete per linear foot was used.

Concrete was delivered to the job from the Tulsa plant of F. M. Stowell. Six 5-yard Smith transit mixers mounted on White trucks were used. The 2-yard Lima with a 1-yard Insley bucket carried the concrete from the transit mixers into the trench. The trucks came out along the embankment from the west band.

Cover work and grading, as well as the dike leveling and shaping, were done by a Caterpillar D6 and an International TD-18 with a Bucyrus-Erie dozer. The wellpoint crews worked around the clock. The other crews operated on a ten-hour day.

Quantities and Personnel

Approximately 2,500 cubic yards of concrete was used. Rock and sand excavation amounted to 16,000 cubic yards. There was 175,000 pounds of reinforcing steel.

Fell & Wheeler, Tulsa, and Black & Veatch, Kansas City, were the design engineers. They were represented by George Straughan, resident engineer, and C. W. Ward, job engineer. F. M. Stowell and H. J. Happel were represented by Mr. Stowell, who supervised a crew of 40. THE END

International Harvester, Heil Make Tractor Pact

A contract has been signed by the International Harvester Co., Chicago 1, Ill., and the Heil Co., Milwaukee, Wis., which will enable I-H to manufacture two-wheel rubber-tired industrial tractors for use in heavy construction work.

Under the terms of the pact, I-H acquires Heil patents covering two-wheel tractors, along with designs and manufacturing data which will materially shorten the time otherwise required by Harvester to engage in the production of the tractors. Until Harvester goes into production, Heil will supply it with two-wheel tractors. Heil will also manufacture certain types of scrapers and wagons for Harvester during the period of the agreement, which covers several years.

Heil is currently turning out two models of the two-wheel tractor. Combined with either scrapers or wagons, they have been marketed through the Heil sales organization under the trade name Heiliners. They will now be sold through Harvester's industrial power division and a worldwide network of distributors under the I-H trade name, International.

Gives Operating Details Of Wheel-Mounted Crane

■ The CraneMobile, a truck-mounted crane made by Bay City Shovels, Inc., Bay City, Mich., is described in literature from the company. The line's 12½, 20, and 25-ton units are described in terms of their stability and balance, power, smoothness of operation, and ease of control.

The booklet takes the reader around the specially-designed carrier and into the crane cab to look over the construction and operating characteristics that make the machine suitable for lifting and material-handling jobs.

The CraneMobile is available in four sizes with a choice of seven mountings. Crane capacities range from 10 to 25 tons. Other Bay City equipment includes crawler-mounted shovels made in a wide range of sizes from ⅜ to 1¼ yards with crane ratings up to 25 tons. The company's self-propelled CraneWagon includes convertible cranes on a wide selection of mountings, with ratings up to 25 tons.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 774.

in our plazas,
parking areas, shopping centers and drive-ins
NEWARK AIRPORT
P & K Double and Single Tapered Elliptical Arm type standards installed here have 25 foot mounting heights, TB-2 Transformer Bases and 12 foot arms. Four 20 foot floodlight poles with twin projector assemblies are also installed. They are in perfect harmony with Newark Airport's recently modernized appearance and efficiency.

the P&K story

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LEVITTOWN, PENNSYLVANIA
Scheduled for completion by the end of 1954, Levittown, Pa. will be the state's tenth largest city! Its streets will feature modern, efficient lighting provided by more than 4,000 P & K All-Aluminum Standards and Brackets: 20 foot pendant type with P & K Tapered Elliptical Lighting Arms.

P & K ALL-ALUMINUM STANDARDS AND BRACKETS ARE PRODUCED IN DESIGN AND TYPE TO MEET EVERY ROAD, HIGHWAY, AREA OR FLOOD LIGHTING REQUIREMENT. They are always the wisest investment for both efficiency and economy:

- Much lighter weight for easy handling and low cost installation
- Negligible rate of corrosion for longest service life
- No painting means initial and year-after-year saving
- Easily salvaged and re-used in event of knockdown

on our highways . . .
THE NEW JERSEY TURNPIKE
Looking toward Laurel Hill and the Lewandowski Bridge crossing the Hackensack River. The P & K All-Aluminum Standards on Transformer bases have 30 foot mounting heights with 15 foot All-Aluminum Tapered Elliptical Arms. They are installed at all interchanges, bridges and service areas along the entire highway.

WRITE FOR LATEST P & K CATALOG . . . and use the P & K planning and advisory services without obligation.

Pfaff & Kendall
84 Foundry Street
Newark 5, New Jersey

The B & D Utility 8-inch power saw.

Line of Power Saws

■ Improved models of the 7, 8, and 9-inch power saws made by the Black & Decker Mfg. Co., Towson 4, Md., have been announced. Features include a new saw grip handle placed at a natural sawing position; a large lever arm for retracting the lower blade guard for making pocket cuts; motors designed specifically for power sawing; and improved cutting line and blade visibility.

The saws have two depth adjustments, front and rear, permitting the handle to be kept at a comfortable position even in very shallow cuts. Maximum depth of cut for the 7-inch saw is 2 7/16 inches; for the 8-inch model, 2 13/16 inches; and for the 9-inch unit, 3 1/4 inches. No-load speeds for the three saws are 4,200, 4,500 and 3,700 rpm respectively.

For further information write to the company, or use the Request Card at page 18. Circle No. 684.

Versatile Motor Oil

■ A new motor oil said to be suitable for both winter and summer use and to increase gasoline mileage in stop-and-go driving has been introduced by the California Oil Co., 45 Rockefeller Plaza, New York 20, N. Y. The manufacturer reports that RPM 10-30 motor oil meets all automobile manufacturers' specifications for SAE grades 10-W through 30. It is said to combine the qualities of four grades in one oil.

Other reported advantages of the new oil are lower oil consumption, less wear, more pull on hills, improved lubrication of hydraulic valve lifter, quicker cold-weather starting, and longer engine life.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 714.

Report on Several Mortars

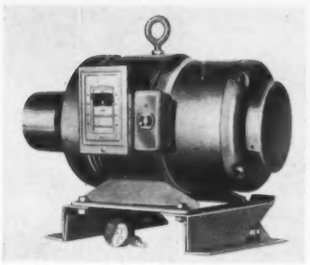
An account of the studies on several mortars with respect to their bonding strengths to four types of stone, dimensional changes under three conditions of storage, and frost resistence is contained in "Studies of Stone Setting Mortars", by Daniel Kessler and Ross E. Anderson. The booklet contains 23 pages, 12 figures, and 11 tables.

Studies of mortars in structures are also discussed. Certain recommendations for selection of mortars for use in stone masonry are included. The publication is available from the Government Printing Office, Washington 25, D. C., at 20 cents per copy. Order National Bureau of Standards Building Materials & Structures Report No. 139.

Standby Generators With Tractor Drive

■ A line of belt-drive generators available in 3,000 to 10,000-watt capacities is announced by D. W. Onan & Sons Inc., University Ave., S. E., Minneapolis, Minn. The manufacturer reports that the new generators supply the same 115 to 230-volt 60-cycle alternating current delivered by the commercial power lines. This makes it possible for tractor owners to provide their own emergency electric power when commercial power is off or when voltage drops.

Mounted on a pivot-type base which maintains the correct tension on the belt, the new generator is equipped with a nonslip flat belt pulley. Although the unit is designed to take overloads, a circuit breaker mounted in a box with convenient knockouts guards against excessive overloads. A plug-in ac voltmeter, together with a single receptacle, permits the tractor engine speed to be adjusted for the desired voltage. Standard equipment includes an outdoor two-pole, double throw, 60-amp manual transfer switch.



A D. W. Onan & Sons standby generator.

For further information write to the company, or use the Request Card at page 18. Circle No. 732.

H. K. Porter Division In Wire-Drawing Field

The H. K. Porter Co., Inc., Pittsburgh, Pa., has acquired The Alloy Metal Wire Co., Prospect Park, Pa., producer of stainless steel and alloy steel wire. The plant will continue operations as The Alloy Metal Wire Co., division of H. K. Porter Co., Inc. The Porter organization, currently engaged in rubber, steel, forged steel fittings, hydraulic equipment, and wire rope manufacturing, acquired the new division as part of its policy of maintaining diversified operations.

Emulsified asphalt aggregate retention tests—standard procedure at McConnaughay Research Laboratory, Lafayette, Indiana.

McConnaughay WEATHER-PROOF ASPHALT EMULSIONS

Besides producing asphalt emulsions which meet all specifications of A.S.T.M., A.A.S.H.O., Asphalt Institute, and the various state, county, and city public works departments . . . McConnaughay Licensees manufacture and recommend Weather-Proof Emulsions with these special qualities:

1. *Resistance to water during and after construction.* Emulsions are not washed off during sudden or prolonged rains occurring immediately after mixing or spreading. Finished pavements are also resistant to water.
2. *Resistance to heat.* Emulsions do not bleed or soften during hot weather. Mixtures of emulsion and aggregate show great strength at 140°F.
3. *Resistance to cold.* Emulsions are tough and resilient instead of brittle at temperatures below freezing.

And here are some of the tests made to assure these all-weather qualities: *Stone-coating*—after a five-minute mix of aggregate with 7% emulsion, the mix must stand immediate washing without loss of asphalt film. *Float* test on emulsion residue at 140°F. must be higher than 800 seconds (pure asphalt of 85-100 penetration tests at about 275 seconds). *Penetration* test on emulsion residue at 140°F. requires a reading of 15 to 50 with a 1″ diameter needle (pure asphalt of 85-100 penetration tests from about 200 to 300). Low temperature penetration tests are also run at 32°F.

Complete test procedures and specifications for McConnaughay Weather-Proof Emulsions will be mailed upon request.

K. E. McCONNAUGHAY
EMULSIFIED ASPHALT
Plants and Processes
LAFAYETTE, INDIANA

McCONNAUGHAY LICENSEES Operating K. E. McConnaughay Emulsified Asphalt Plants

Albany Asphalt & Aggregates Co.
Albany, *New York*

Knight Paving Products, Inc.
Gardenville, *New York*

Knight Paving Products, Inc.
Ithaca, *New York*

Knight Paving Products, Inc.
Rochester, *New York*

Bituminous Materials & Supply Co.
West Des Moines, *Iowa*

C. C. Plumb, Elmwood Station
Providence 7, *Rhode Island*

Seaco, Incorporated
Columbia, *South Carolina*

C. C. Plumb
Hartford, *Connecticut*

Asphalt Products Co., Inc.
Nashville, *Tennessee*

E. A. Mariani—Emulsified Asphalt
Tampa, *Florida*

Emulsions, Inc.
Lawrenceville, *Illinois*

Walsh & Ikeler
Gary, *Indiana*

Ready-Mix Asphalt, Inc.
Fort Wayne, *Indiana*

Fauber Construction Co.
Lafayette, *Indiana*

Brookman Construction Co.
Muncie, *Indiana*

Bituminous Materials Co.
Terre Haute, *Indiana*

Wabash Valley Asphalt Co.
Terre Haute, *Indiana*

Asphalt Materials and Construction, Inc.
Indianapolis, *Indiana*

Pan-Am Southern Corporation
New Orleans, *Louisiana*
(Also serving Alabama and Mississippi)

Doherty and Swearingen Co.
Yarmouth, *Maine*

Berkshire Asphalt Co., Inc.
Springfield, *Massachusetts*

James Huggins & Sons, Inc.
Malden, *Massachusetts*

Bituminous Materials Co.
Jackson, *Michigan*

Eastern Representative:

John A. Dow
157 Church St.
New Haven 10, *Connecticut*

SPECIFICATIONS OF THESE COLD-MIX PROCESSES AVAILABLE ON REQUEST

1 – Penetration Macadam, 2 – Open-Graded Plant Mix, 3 – Open-Graded Road Mix, 4 – Dense-Graded Plant Mix, 5 – Dense-Graded Road Mix, 6–Mat Coat, 7–Seal Coat, 8–Sand Mix, 9–Sand Honing, 10–Patching.

The new twin 92-inch portable dust collector made by the Standard Steel Corp.

Mobile Dust Collector For Asphalt Plants

■ A portable dust collector for 3,000 to 5,000-pound asphalt plants is announced by the Standard Steel Corp., 5001 S. Boyle Ave., Los Angeles, Calif. The new Standard twin 92-inch cyclone unit is mounted on its own gooseneck trailer-type frame and is available with or without running gear. It is designed for use with standard truck-size tires, thus permitting interchange with other equipment.

Operated with either diesel engine or electric-motor drive, the dust collector comes complete with large exhaust fan, dust-return screw, and fan stack with louver damper for maximum dust control. The unit meets all state highway clearances.

For further information write to the company, or use the Request Card at page 18. Circle No. 717.

Perfection Co. Appoints

Recently appointed to serve as a sales representative in the southwestern part of the country for the Perfection Steel Body Co., Galion, Ohio, is John J. Hannan. Mr. Hannan will make his headquarters in San Antonio, Texas. Perfection manufactures standard and special-purpose dump bodies, hydraulic hoists, and hydraulic end gates.

Modernization Brochure

A brochure to help guide company management and engineers in dealing with the complex problems of modernizing and expanding plant facilities has been published by Walter Kidde Constructors, Inc., 140 Cedar St., New York 6, N. Y. This is the second in a series of "aids to management" studies by the engineering and building firm.

"Basic Planning—Plant Modernization and Expansion" outlines a detailed step-by-step procedure for analyzing existing plant facilities to establish the type, quantity, and value of products which should be manufactured; type, number, and cost of tools, equipment, and machinery required; and size, location, and cost of floor space needed for projected modernized or expanded plant and production facilities.

By following the procedure outlined in the brochure, management can arrive at the basic cost of a proposed modernization and/or expansion program.

The 16-page booklet, along with the first in the aids to management series, "Factors Affecting Plant Location", can be obtained on request from Walter Kidde Constructors, Inc.

Utility Roller Described

■ The utility 1-ton roller made by Soilaire Industries, 1200 2nd Ave. S., Minneapolis 3, Minn., is described in new literature. The Rollpac has a variable weight range of from 1,130 pounds net with operator to 2,360 pounds loaded with sand. With water, the gross weight is a little less than 2,000 pounds. The compaction at gross weight is 34 pounds per linear inch on the front roll and 44 pounds on the rear roll.

The front roller is built in two sections and is 18 x 28 inches in size. The rear roller is 22 x 30 inches. The unit is sold with or without a 15-gallon water tank for sprinkling the rolls. The company also offers a 1-ton bed tilt-top trailer which can be used to transport the roller.

Also available is a 6-inch-face outside pressure wheel that mounts directly in line with the rear axle. With this wheel, it is possible to roll flush with a wall or curb to save time consumed in hand tamping.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 697.

American Bitumuls Opens Eastern Division Office

An eastern division office has been established at 10 E. Fayette St., Baltimore, Md., by the American Bitumuls & Asphalt Co., San Francisco, Calif. The office is headed by L. P. Street, vice president in charge of eastern marketing. M. A. Ernst is his staff assistant.

The office is also the new headquarters of A. McGregor, manager of eastern production, and R. P. King, supervisor of Laykold sales.

The sale and servicing of all company asphaltic products will continue to be handled by the eastern district offices at East Providence, R. I.; Perth Amboy, N. J.; Baltimore, Md.; Columbus, Ohio; St. Louis, Mo.; and Mobile, Ala.

Always a smooth road ahead *on the Pennsylvania Turnpike*

Pennsylvania Turnpike Commission

350,000 FEET OF FLEXCELL* JOINT FILLER

ASSURE SMOOTH, TIGHT, MAINTENANCE-FREE JOINTS!

No bumpy, bulging joints—no gaping crevices—no costly maintenance, when you use Flexcell Bituminous Fibre Expansion Joint Filler wherever concrete meets concrete!

Flexcell Joint Filler is made with a tough, durable cane fibre base containing millions of tiny air cells. These air cells permit Flexcell to absorb pressure from expanding concrete without extruding—and spring back to keep the joint closed when the concrete contracts. Thus, practically maintenance-free joints that *stay* smooth, tight and attractive are assured!

Low in Cost

Flexcell Joint Filler is easy to handle, easy to work with. Provides neat, finished joints without trimming. It is impregnated with asphalt to resist moisture—and protected by the patented Ferox® Process against dry rot and termites. Withstands toughest service, severest weather conditions—saves on maintenance year after year. Yet with all this, it is *low in cost!*

Flexcell Joint Filler has long been specified by leading engineers, contractors and architects—as well as the United States Army, Navy and other Federal, State and Municipal agencies. It will pay you to discover the reasons for this preference . . . *before* you start your next job!

Mail coupon below for complete information on the advantages and economies of using Flexcell Joint Filler for pavements, runways, sidewalks, curbs, gutters, driveways, concrete floors. No cost or obligation!

Another CELOTEX Product

FLEXCELL

REG. U. S. PAT. OFF.

BITUMINOUS FIBRE EXPANSION JOINT FILLER

The Celotex Corporation, 120 S. LaSalle Street, Chicago 3, Illinois

*Flexcell is a Trademark identifying Bituminous Fibre Expansion Joint Filler marketed by The Celotex Corporation.

MAIL COUPON TODAY!

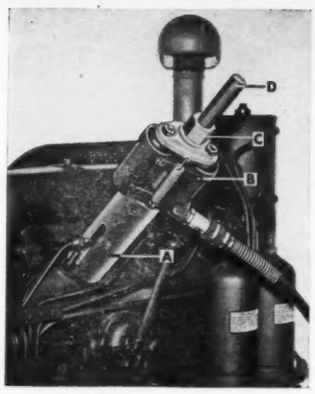
The Celotex Corporation, Dept. CEM-24
120 S. LaSalle St., Chicago 3, Ill.

Without obligation, please send me complete data and prices on Flexcell Bituminous Fibre Expansion Joint Filler.

Name_____

Address_____

City_____ Zone_____ State_____



Shown on this Owatonna precombustion cup puller are the puller screw, D; sleeve, A; forcing out nut, C; and hydraulic ram, B. The tool can also be used manually.

Diesel Engine Tool

■ A puller for removing the precombustion cup on all International diesel engines has been announced by the Owatonna Tool Co., 381 Cedar St., Owatonna, Minn. It provides a more positive grip and will pull the cups regardless of their condition.

The tool consists of three sizes of expanding collets that grip the inside diameter of the cup, an expanding screw that tightens the collet in the cup, a puller screw, a sleeve, a forcing nut, and a Power-Twin ram for use when the tool is operated hydraulically. This tool can be used manually as well, in which case the hydraulic ram is not used, and the nut is turned with a wrench.

For further information write to the company, or use the Request Card at page 18. Circle No. 788.

Conveyor Belt Cover Is Abrasion-Resistant

■ Many of the company's conveyor belts will now be made with a new cover that resists abrasion and tearing, it is reported by Raybestos-Manhattan, Inc., Manhattan Rubber Division, Passaic, N. J. The newly developed XDC conveyor belt cover is said to stand up to heavy abrasive use, such as rock conveying, without tearing.

The construction of the new belt cover is based on the belief that final conveyor belt failures are due to cover wear through cuts and tears rather than to tensional stress. Torn sections of the cover result in the exposure of the internal strength members which, once exposed, deteriorate rapidly.

For further information write to the company, or use the Request Card at page 18. Circle No. 718.

Brochure on Chain Saws

■ A folder illustrates and describes the chain saws made by the Bolens Products Division, Food Machinery & Chemical Corp., Port Washington, Wis. Six available guide bar and chain attachments are listed, including a bow saw unit.

The brochure also discusses in detail the design, construction, and operation of the saw's basic engine unit. The manufacturer's engine replacement plan is also described.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 763.

Waterproofing Compounds

■ An invisible silicone-type water repellent for masonry is described in literature from the Haynes Products Co., 4007 Farnam St., Omaha 3, Nebr. The water repellent protects porous above-grade exterior walls against moisture and stains. The literature lists characteristics, application data, and average coverage of the material when used on various types of surfaces.

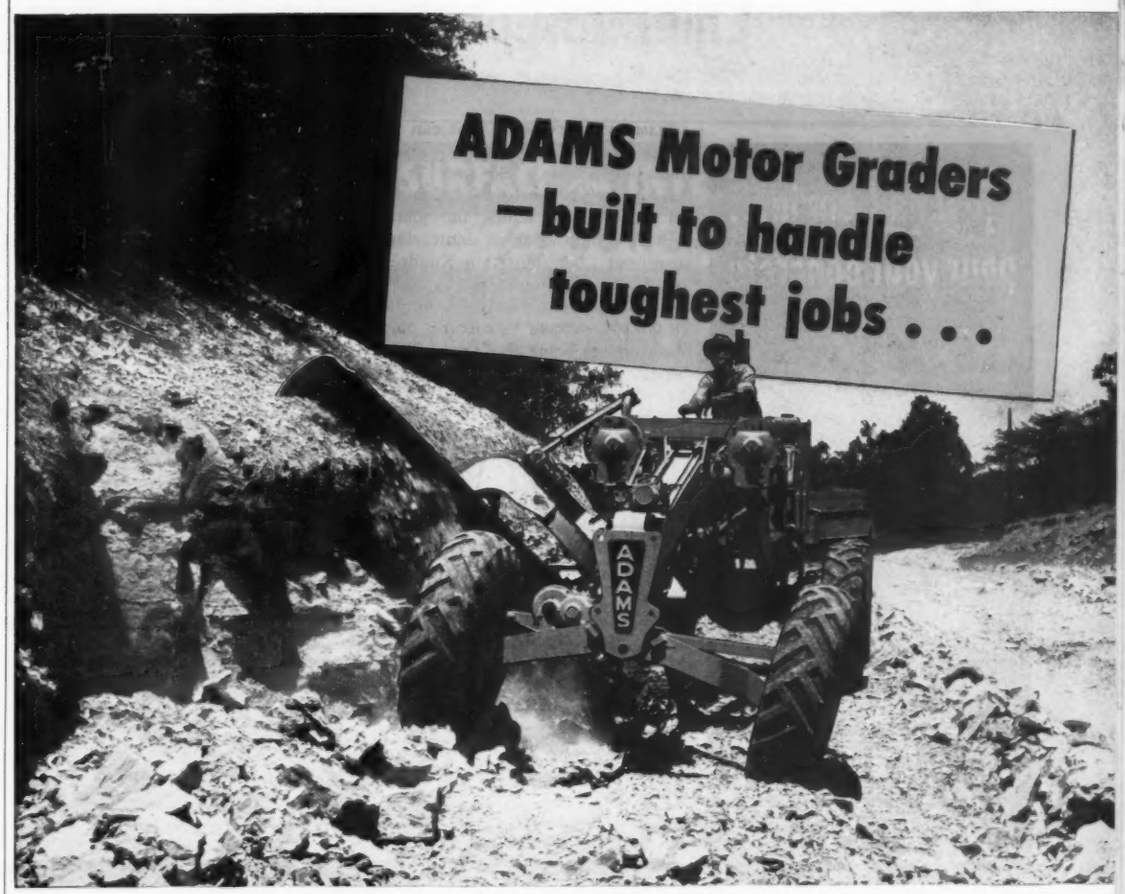
The company also makes another clear water repellent, Formula No. 640. This product, however, darkens on some very porous bricks and sand stone, while the silicone-type does not. Another difference is that while Formula No. 640 cannot be put on below 60 degrees F, silicones can be brushed or sprayed on the masonry down to a zero-degree temperature.

The silicone coating is recommended where masonry must breathe since it does not clog the pores of the material. Formula No. 640, which can be used below grade, fills the pores to stop water even under pressure.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 713.

Film Catalog Available

A catalog of motion picture films available on a loan basis from manufacturers of road-building equipment to educational institutions has been compiled by the Committee on Visual Aids, Educational Division, American Road Builders Association, World Center Bldg., Washington 6, D. C. The booklet describes the films and presents an alphabetical listing of the firms from which they are available, giving the name and address of the person to whom the request for a film loan should be made.



Jobs for motor graders don't come much tougher than the heavy bank-cutting operation shown above. Working in rugged, rocky country like this demands unusual power, strength and stamina—the kind that Adams Motor Graders are world-famous for.

The ability to stand up under punishing work is only one of the many advantages you will find in Adams Motor Graders. They also give you a combination of time- and money-saving features not to be found in any other machines. (See listing at right.)

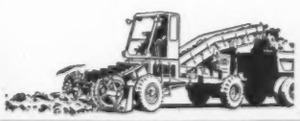
Before you buy any motor grader, let your local Adams dealer show and demonstrate what these advantages can mean to you in the way of higher production and lower costs.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

Only ADAMS Offers All These Features:

- NEW CONSTANT-MESH TRANSMISSION—quick, easy, positive gear shifts.
- 8 FORWARD SPEEDS—up to 26 mph. for fast transport.
- 4 REVERSE SPEEDS—up to 13 mph. Save time on shuttle work.
- 3 CREEPER SPEEDS—low as ¼ mph. (Optional).
- RUBBER-MOUNTED ENGINE—floating power—no vibration transmitted to grader.
- DUAL BRAKING SYSTEM—quicker, easier, safer stops, with less effort.
- FOOT ACCELERATOR—for easier, safer overland travel.

ADAMS



Motor Graders TraveLoaders Pull-Type Grad

Suspended by a safety belt equipped with a cable instead of a rope, a workman packs form bolt holes on a structure at Chief Joseph Dam. Other men work along a Burke scaffold overhead.
Ray Day Photo

Chief Joseph Project Made Safe By Planning

ELIMINATE ACCIDENTS that can be excused lamely, and you have made construction safe. So says T. J. Boyd, safety supervisor for Columbia River Constructors, the joint-venture group of nine contractors sponsored by Morrison-Knudsen Co., Inc. It is Boyd's job to make the CRC spread perfectly safe on the $40,000,000 intake structure and powerhouse being built at Chief Joseph Dam for the Corps of Engineers.

With the help of construction crews, supervisors, and executives, Boyd is proving that construction can be safe. Not a single fatality has occurred to mar the 800,000-cubic-yard concrete job near Bridgeport, Wash. Between 1951, when the job was begun, and last summer, an average of 1,231 men worked on CRC's payroll, racking up a cumulative total of 1,700,000 man-hours. And during that time, the severity rate was only 2.2 and the frequency rating, 20.93. Although there has been one fatality on the job, it was not due to CRC's operations.

Safety Program

Boyd does not believe safety records on dangerous jobs like the Chief Joseph powerhouse are a matter of luck. If they were, Boyd would certainly seem favored by lady luck. He first got interested in the safety business seven years ago when he worked at accident prevention on Bull Shoals Dam on the White River in northern Arkansas for the same Corps of Engineers. Bull Shoals' record wound up leading the Corps of Engineers Southwestern Division. On that job, Boyd worked for safety-minded Harvey Slocum and that fiery dam builder, according to Boyd, taught him that safety is nothing more than common prudence exercised 24 hours a day. Boyd never writes a safety showing—good or bad—as mere luck.

Must Start at Top

"Safety's got to start at the top of any contractor's organization," Boyd states. "The executive management of a company must believe wholeheartedly in a safety program and make it an important matter in company policy. That policy must be channeled down from the project manager, general superintendent, and every division head, foreman, and straw boss on the job. These are the men who make a safety program effective. It can't be done by the safety engineer.

"Morrison-Knudsen has such a policy, and no one very close to Mr. Morrison is apt to forget it for very long." To illustrate his point, Boyd produced a memo from Morrison underlining the importance of job safety.

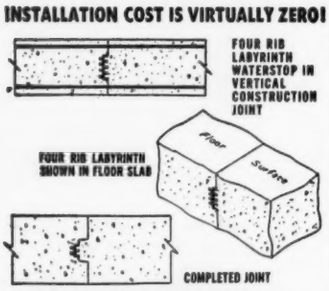
In the letter, Morrison pointed out that "a good many hundreds of dollars have been donated this year to meet the emergency needs of men who were hurt and to aid the families of deceased Em Kayans, some of whom died of injuries received on the jobs." The memo stated that each new case "only re-emphasized the need, always and everywhere, to keep safety first in our thinking and in our actions.

just nail 'em in... pour your concrete

AND FORGET ABOUT SEEPAGE WITH LABYRINTH WATERSTOPS

• Concrete shrinkage *can't* cause leakage between pours when you're protected by ribbed and grooved polyvinyl plastic Labyrinth Waterstops in the joints. Economical? You bet . . . No special forms, no metal fins to bend or tear . . . no maintenance cost, AND . . .

INSTALLATION COST IS VIRTUALLY ZERO!



WATER SEALS, inc.
9 SOUTH CLINTON STREET
CHICAGO 6, ILLINOIS

For Further Information and Sample—Clip the Coupon
Patent applied for

WATER SEALS, INC.,
9 South Clinton St., Chicago 6, Illinois
Send full information and sample.

Name_____
Company_____
Address_____
City_____ Zone____ State_____

KOHLER ENGINES

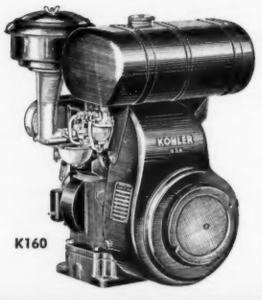
K90

K90 3.6 H.P.
K160 6.6 H.P.
K330 12.0 H.P.
K660 26.8 H.P.

4-CYCLE • AIR-COOLED

Kohler Engines are engineered and manufactured to the high standards which have made the Kohler mark known for quality the world over. Power for garden tractors, pumps, sprayers, snow removal equipment, grain elevators, hoists, portable saws, concrete mixers, compressors, industrial lift trucks.

Write for information



K160

K330

K660

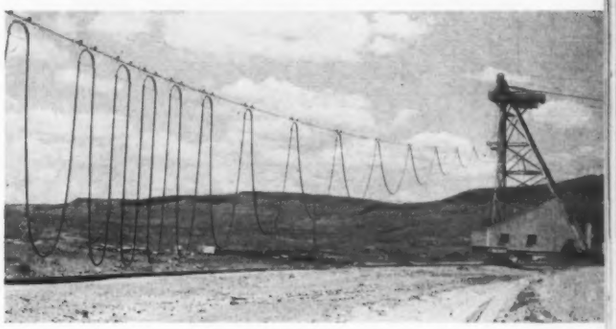
Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

A warning sign is posted over a trolley protection boxing which serves the 450 Bucyrus-Monighan crane.

Suspended from a support cable, this power line is held safely above ground as head towers move along their tracks.



Company policy and cooperation of workmen combine to make safety program effective

"We cannot repeat too often to every executive, every supervisor, and every workman on every M-K project that there is no such word as 'expendable' in the M-K lexicon as applied to human beings. Machinery and equipment, tools and supplies, and materials of all kinds are expendable, but not men. If there is, in any M-K organization, a cynic or fatalist who ignores the safety regulations on the ground that, 'when it's my turn I'll get it', let's get rid of him. The disaster he is courting may take a good man with him.

"The ever-increasing size of our mobile machinery," the memo continued, "brings a corresponding responsibility for added safety precautions by the men who work around it." Morrison's safety note concluded: ". . . while our work is done by men and machines, without the men the machines would never move. Their lives and health must be the first considerations on all M-K work."

The application of this safety policy plays an important role in Chief Joseph's planning schedule. A safety meeting was one of the first meetings called after the project began. There, in the first of many talks, Boyd explained his conception of what he had been hired to do, noting that he had to have the wholehearted support of every man present if the program was to succeed.

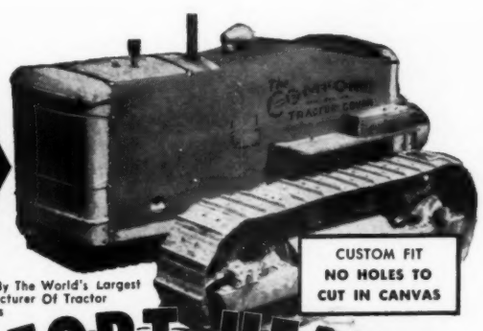
With the job well under way, Boyd meets frequently with Phil Soukup, construction manager, and the two compare notes and work out safety procedures. These informal conferences produce many of the ideas making up Chief Joseph's safety program.

"Never Let 'Em Forget"

All of these ideas are based on the premise, which Boyd believes firmly, that safety is soon forgotten if it is not practiced 24 hours a day. The whole safety program aims not only at preventing accidents, but also at serving as a constant reminder that construction safety is a full-time job.

(Continued on next page)

The Improved HEATER for CRAWLERS



Made By The World's Largest Manufacturer Of Tractor Heaters

CUSTOM FIT NO HOLES TO CUT IN CANVAS

COMFORT® HEATER

U.S. Pat. Nos. 2,452,834; 2,461,974
Canadian Pat. No. 471,256

PROVIDES 7 ADVANCED IMPROVEMENTS NO OTHER CRAWLER HEATER CAN MATCH

- ✓ Designed to accommodate dozers and other generally used equipment.
- ✓ Special tailored flaps allow easy access to starting motor, oil sticks, etc. No holes to cut.
- ✓ Tractor operating controls in protected area.
- ✓ Motor side panels fold back for heat control on warmer days.
- ✓ No ties or springs under tractor to snag on brush or other obstructions.
- ✓ Sturdiest crawler tractor heater built — made of heavy iron framework and heavy weather resistant canvas.
- ✓ Custom tailoring gives better fit — more efficient operation.

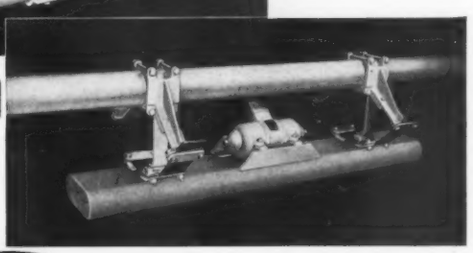
WINDSHIELDS AVAILABLE
Optional at small extra cost. 2 windshields can be used on models designed for twin seat tractors.

Ask Your Distributor for Complete Details or Write
COMFORT EQUIPMENT COMPANY 2609 AG Walnut • Kansas City, Mo.

SURFACE and INTERNAL VIBRATION for CONCRETE PAVING

INTERNAL TYPE

Tubes vibrate deep in concrete. One unit, as shown, for each 5'-0" (maximum) of slab width. Usually attached to front of finisher.



SURFACE TYPE

Tube vibrates on surface. Accomplishes thorough densification of 10" concrete slabs. One unit, as shown, for each 6'-0" (maximum) of slab width. Usually attached to rear of spreader.

JACKSON GIVES YOU BOTH!

A 25', 5-motor Tube of the internal type quickly plasticizing a tough mix on thick slab construction.

On this job, on which no spreader was used, the Paving Tube materially reduced the cost of spreading concrete.

The contractor who owns a Jackson Paving Tube can quickly switch from INTERNAL to SURFACE vibration, or vice versa, and meet any concrete slab specifications — at a minimum of equipment investment.

Supplied with extraordinarily powerful motors, the JACKSON INTERNAL Paving Tube will thoroughly vibrate all concrete slabs as thick as 24" and as wide as 25', quickly plasticizing the very dry, harsh mixes. Attached to a standard finisher, its use materially reduces spreading labor where no spreader is used. Adapted to SURFACE vibratory operation, it will do a perfect job of vibrating any mix in depths up to 12". Powered by a Jackson Portable Power Plant mounted on parent equipment and controlled by its operator.

For better results and lowest possible costs buy a JACKSON Vibratory Paving Tube. See your Jackson distributor or write for complete details.

In this view note the highly plastic condition of the concrete accomplished by the surface type Paving Tube towed by the spreader.

JACKSON VIBRATORS, INC.
LUDINGTON MICHIGAN

As another precautionary measure, steel guards are welded in front of the crane's wheels so that a workman falling onto the tracks will be pushed out of the path of the wheels.

(Continued from preceding page)

There are many ways in which safety is emphasized and re-emphasized at Chief Joseph. Driving into the area, one of the first things a person sees is a jumbo-sized sign carrying a safety poster supplied by the National Safety Council. Since the poster is changed once a month, its attention-getting value remains high. A printed reminder that safety and intelligent use of expensive equipment go hand in hand is tacked to the cab windshield of each machine. At operations headquarters, located on top of a small knoll near the powerhouse tailrace area, there is a safety board showing the breakdown, by divisions, of lost-time accidents to date. The most coveted total on this board is zero. If the board shows something else, it is probable that the superintendent and foreman of the division involved will soon be in conference about it. All the open parts of the project are within sight of some type of safety sign or reminder so that workmen on the CRC spread cannot fail to notice them.

Once a month, one workman in each division is appointed to a standing committee participating in better safety. According to Boyd, some of the best and most intelligent safety suggestions have come from these rotating committees. On-the-job safety meetings are held personally by Boyd, who visits the various crews as time allows. Special meetings are held every two weeks with foremen and superintendents.

Close Quarters Mean Danger

The Chief Joseph powerhouse job is dangerous from several stand-

You get "ACTION" with a... ROGERS TRAILER

You get ACTION in loading and unloading because they are properly designed by long experienced specialists; you get ACTION in maneuverability because of correct weight and load distribution; you get ACTION in faster road travel because alloy steel main members assure lightness with strength; you get ACTION in controlling the trailer under all conditions due to massive brakes of advanced design. And above all you get ACTION on the profit side of the ledger in exceptional freedom from repairs year after year.

These features are embodied in a complete line of trailers including one specifically adapted for every hauling service. Write or phone for our large illustrated catalog.

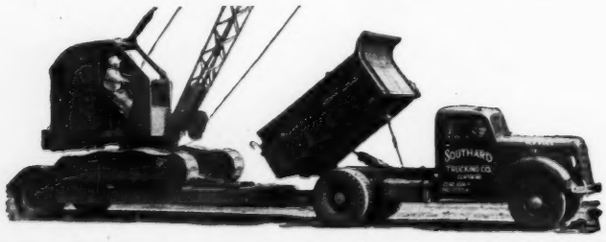
YOU GET MORE FOR YOUR MONEY IN A ROGERS TRAILER

EXPERIENCE builds 'em — PERFORMANCE sells 'em

ROGERS BROS. CORP.

ALBION, PENNA. CABLE: BROSITES

Export Office: 50 Church St., New York 7, N. Y. U. S. A. Cable Address-Brosites



Attaching loaded tilt deck trailer

Digs 4 to 5 Jobs Every Day

Hattendorf-Bliss meet heavy daily schedules of scattered jobs—regardless of soil and weather conditions—because their Clevelands *dig* them *on time, every time.*

Each extension crew of Hattendorf-Bliss, Inc., Cleveland, Ohio contractors, *completes* 4 or 5 jobs every day—trench dug, pipe laid, trench filled, job cleaned up. The jobs average 250-300 feet each, for 4, 6 and 8 inch pipe and require 10-15 miles of traveling through big-city traffic.

Hattendorf-Bliss have standardized on Clevelands for over 20 years. Currently the firm is working 9 Cleveland trenchers and backfillers for many types of trench work. In one 10-hour day, a Hattendorf-Bliss crew with one Cleveland trencher completed 11,000 feet—over 2 miles—of trench 19" wide and 30" deep for a 4" pipeline, including the crossing of a 20' stream.

"We go with Clevelands," say Hattendorf-Bliss, "because we know from experience they'll do every job we schedule them for. They stand hard usage and they're fast. Their full-crawler mounting and low bearing pressure protect lawns and sidewalks—we practically never have a damage claim. And because they're compact and easy to transport, we can really cover the distance between jobs with safety at good speeds."

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points. Many operations are conducted in close quarters, and with different crafts working together in congested areas, accident potential is increased. Boyd's worry about fatalities is not much greater than his concern about the kind of accident in which a carpenter gets hit in the eye with a piece of pipe carried on a plumber's shoulder.

Added to the problem of congestion are almost all the dangers inherent in a huge heavy construction job—high levels, scaffold work, and risky rigging. There are high-tension wires nearby. A forest of booms is made by the gantry-mounted cranes and 5-yard crawler cranes which work close together. In these tight quarters, it is possible that someone may be working under a bucket of concrete as it is swung into a powerhouse pour.

Steel guards protect the truck wheels of the railroad-mounted Bucyrus-Monighan crane working above the intake structure. A boxed timber enclosure runs around the bare power trolley wires which drive the travel motors. Catwalks are barricaded at their ends so that men cannot fall onto the dowel steel embedded in the concrete floors below. An M-K policy in force for the CRC combine furnished safety insoles to men free of charge, whether or not the men wear safety shoes. Safety belts, formerly equipped with ropes, now are equipped with cables. Numerous permanent wooden stair-step systems cover the intake and powerhouse structures. These stair-steps, replacing the rickety ladders used in the past, not only make climbing safer, but also allow men to get to their jobs in less time.

But there is also the danger of taking too many safety precautions. Boyd illustrated this point when someone pointed to a catwalk along a batch plant railroad trestle having a guardrail only on the outside. When asked if there shouldn't be a guardrail on the other side too, Boyd replied, "Absolutely not. If a man ever has to jump from that trestle in a hurry, I don't want a guardrail in his way. That's a case where a so-called safety device would create danger."

Job Infirmary

The project has its own infirmary, set on a hill on the left abutment to the dam and above the powerhouse area. The company physician, Dr. F. P. Cameron, works on the day shift with a registered nurse. The swing and graveyard shifts are staffed by registered nurses. Dr. Cameron, who lives in Bridgeport not far from the dam and powerhouse, is also on 24-hour call in case of emergency.

The infirmary has its own laboratory and is equipped with diathermy machines, X-ray equipment, a darkroom, a four-bed general ward, and a private room. Two ambulances are maintained on a stand-by basis. Stretchers are stored in special boxes at carefully selected locations around the congested work area. The boxes are rigged up so that in an emergency, they can be picked up by a crane's load line to ride the doctor and nurse down to the scene of the accident.

Boyd will be the first person to deny that he is a one-man show. Resident Engineer Wagner of the

(Concluded on next page, col. 3)

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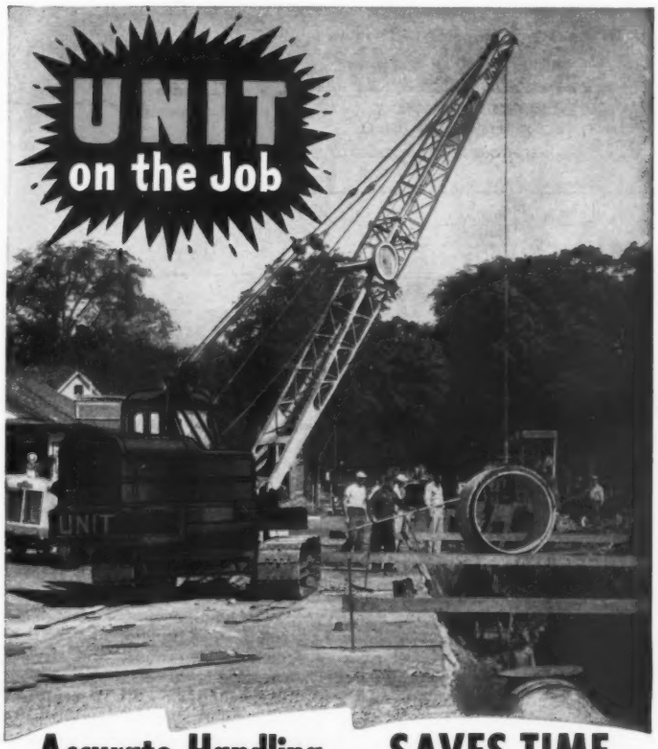

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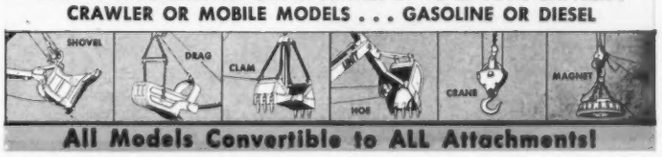

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NORFOLK, VA. — Hall Hodges Co., Inc., P. O. Box 7055, Lafayette Station.
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Cold-Poured Joint Sealer

■ A data sheet describing its cold-poured joint sealer for concrete pavements has been issued by the Flintkote Co., 30 Rockefeller Plaza, New York 20, N. Y. The cold-poured-type Flintkote CPS is a rubber-asphalt blended compound which is pumped from a drum by air pressure and extruded into the joints or cracks through a narrow mouth nozzle.

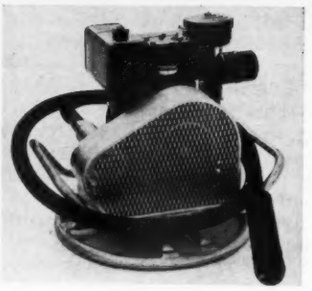
The manufacturer states that sealing compounds for concrete pavements comprising blends of rubber are better adhering and more elastic and flexible to withstand pavement expansion and contraction without exposing the joints to the infiltration of water or incompressible materials. It is pointed out that the new product does not replace the standard hot-poured rubber-asphalt Flintseal or its companion hot-poured jet-fuel-resistant Flintseal JFR.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 756.

(Continued from preceding page)

Corps of Engineers works closely with Boyd, who gives him much credit for the program's effectiveness. Bert Richter, safety engineer of the Seattle district office of the Corps, also comes in for Boyd's commendation.

The safety precautions used on the job can be found by leafing through almost any safety manual. What cannot be found in the manual is Boyd's concern that every man know and observe the rules. "Good housekeeping", sometimes little more than a catch phrase, is here a tangible program that is showing excellent results. Chief Joe has been made a safe powerhouse through a planned combination of equipment, program, and staff, together with the cooperation of the men on the job. THE END



Circular Base for Gas Vibrator Unit

■ For greater compactness and light weight, Viber now offers its gas-engine-driven vibrator with a large-diameter circular pedestal base. The 24-inch-diameter base saves 14 pounds in weight and 10 inches in over-all length compared to the standard two-wheel carriage mounting with which it is interchangeable.

The base is all-welded and is fabricated of standard 1-inch pipe with cross members supporting two sealed ball bearings. These ball bearings carry the swivel plate on which the vibrator engine and take-off shaft are mounted, permitting the entire upper assembly to rotate freely through 360 degrees.

For further information write to the Viber Co., 726 S. Flower St., Burbank, Calif., or use the Request Card at page 18. Circle No. 738.

Industrial Engine Line

■ A folder describing the company's line of industrial engines has been issued by the White Motor Co., 842 E. 79th St., Cleveland 1, Ohio. The folder describes the White Mustang engine that is built in a range of sizes from 50 to 200 hp. The engine is now available for LPG fuel as well as for gasoline.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 757.

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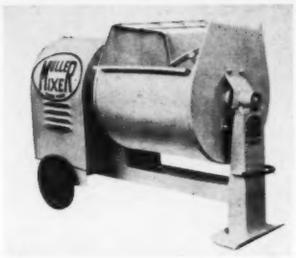


Small Mortar Mixer

■ A new plaster and mortar mixer with a capacity of 2 cubic feet is announced by the Muller Machinery Co., Inc., Metuchen, N. J. The unit is designed primarily for the small contractor or plasterer having a two or three-man crew, although the larger contractor may use it as auxiliary equipment for use in places inaccessible to larger mixers.

Weighing 195 pounds complete, it may be carried or hoisted easily to any location. The new mixer is available with either a 1.7-hp Briggs & Stratton air-cooled engine or a 110-volt single-phase ½-hp electric motor.

For further information write to the company, or use the Request Card at page 18. Circle No. 711.

Alloy-Steel Cutting Edge For Dozers and Scrapers

■ A bulletin is available on an alloy-steel cutting edge for bulldozers and scrapers made by the Shunk Mfg. Co., Bucyrus, Ohio. The Rhino blade is precision machined and rolled in accordance with exact specifications. The new cutting edge will be available in all popular sizes. Also manufactured by the company is a line of scraper, bulldozer, maintainer, and snowplow blades for highway construction and maintenance.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 742.

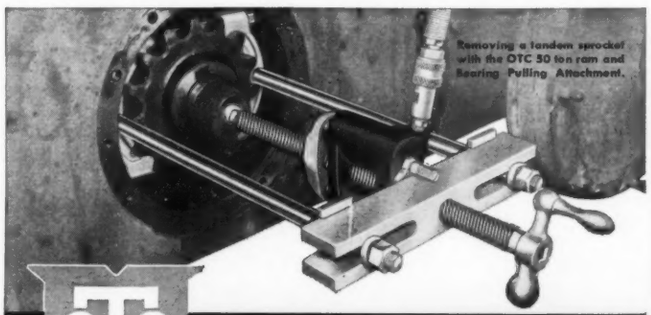
Derricks and Hoists

■ A variety of gas, electric, and hand-powered hoisting machinery is described in literature from the Sasgen Derrick Co., 3101-29 Grand Ave., Chicago 22, Ill. The catalog covers derricks, hoists, winches, contractors' material elevators, swing-stage scaffold winches, and truck derricks.

In addition to the standard Sasgen derrick, the literature shows pole, setter, A-frame, tripod, and stiff-leg derricks. The hoists illustrated are light, medium, and heavy-duty units powered by a gasoline engine or an electric motor. Single and double-drum models are available.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 792.

"I've heard rumors the boss has devised some devilish method to hurry us up on this job."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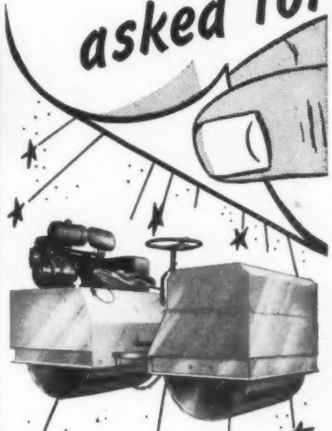

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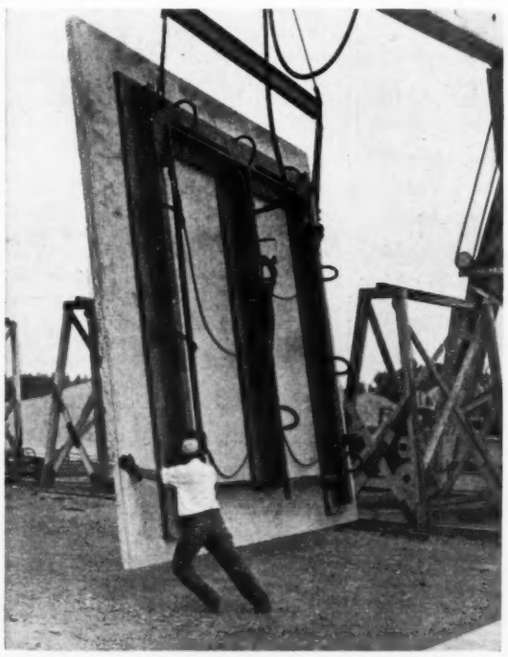
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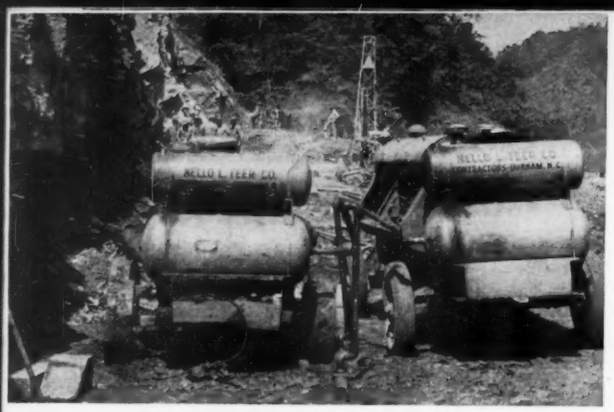


Two of the four Gardner-Denver compressors which supplied air for the rock-drilling on a grading job for the West Virginia Turnpike. In the background is a Joy percussion drill.

ROCK SLIDES, wet weather, and steep slopes which permitted only minimum crews of men and machinery to work were some of the major difficulties encountered by the Nello L. Teer Co., Inc., Durham, N. C., on its contract for grading and draining a 3-mile section of the West Virginia Turnpike through the mountains near Cabin Creek.

The area, involving a great deal of rock excavation, starts at the north portal of Standard Tunnel, which is currently being built, and extends toward the town of Miami, about 30 miles from Charleston. Work was started January 20, 1953, and was completed in October. Construction of three reinforced-concrete culverts was subcontracted to the Agnew Construction Co., Inc., Ronceverte, W. Va.

A 75-foot slice had to be taken out of the side of the mountain to start the $3,000,000 project. The sand rock and shale were fairly easy to drill and broke up well for use on the embankment portions of the job, which involved more than 1,500,000 cubic yards of excavation and 719,000 cubic yards of compacted embankment. A crack drilling crew worked the 10-hour daylight shift. They broke out enough rock to keep three Northwest 80-D shovels busy for both shifts, loading a dozen 22-ton rear-dump Euclids with conventional transmissions.

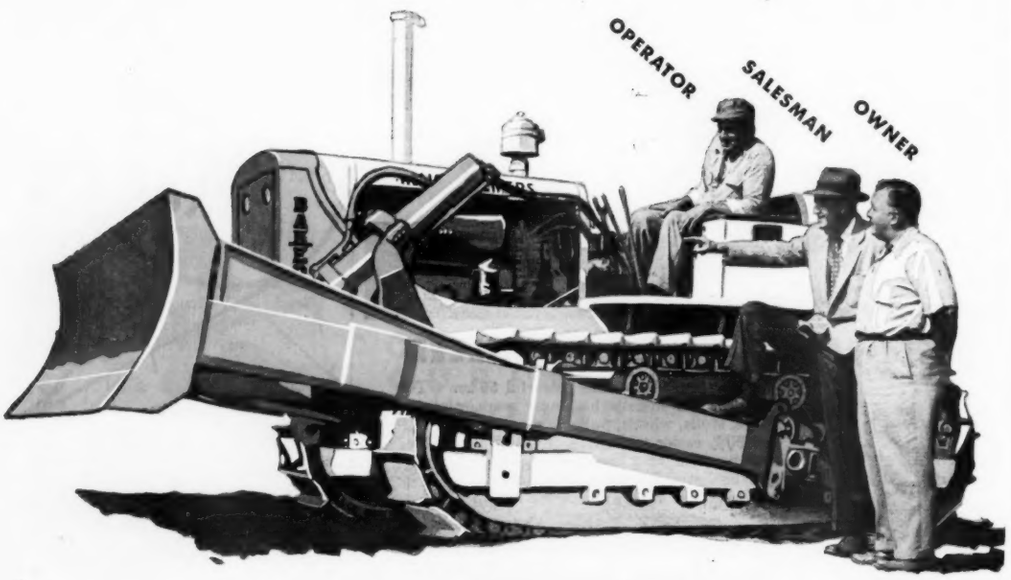
Twenty-foot benches were drilled with six Gardner-Denver wagon drills using Timken 2¼ and 2½-inch detachable bits, a Joy TM 500 4-inch percussion drill, and a Winter-Weiss 4¾-inch rotary. Pneumatic power was supplied by four Gardner-Denver 500's, two Jaeger 600's, and an Ingersoll-Rand 600. The holes were loaded with Atlas and American Cyanamid 40 per cent gelatin dynamite and detonated with Rockmaster caps with 0 to 5 delays.

Grading and Compaction

The end-dump Euclids spread on the run. Their 22-ton windrows were bucked with eight Caterpillar D8 dozers. Finish grading in 8-inch uncompacted lifts was handled by a pair of Caterpillar No. 12 motor graders. The laydown was compacted with a 50-ton Tampo pneumatic compactor and two Buffalo-Springfield three-wheel 10-ton water ballast rollers. This came after the lift had been thoroughly worked over with two Tampo sheepsfoot rollers pulled by D8's.

About half of the 1,610,000 cubic yards of roadway excavation went into the compacted embankment, which was compacted to from 95 to 100 pounds per cubic foot at 100 per cent dry density. Disposition of nearly 1,000,000 cubic yards of spoil in designated spoil areas often

These 3 men know *Why...*



...Baker Blades are your best buy

SALESMAN Frank Conway of Brock Tractor Co., Baker, Allis-Chalmers dealer, Buffalo, N. Y., says: "Baker has always been the easiest blade of all to sell. That speaks for itself . . . the men who buy 'em and operate 'em know what they want, and *they want Baker.*"

OWNER Jim Soccio (on right, partner-owner of Soccio & Della Penna, general contractors, Batavia, N. Y.) says: "Baker Blades stand up! They give us more time on the job and less time in the repair shop . . . that's why we specify Baker on every A-C Tractor we buy!"

OPERATOR Larry Torcello, Batavia, N. Y., says: "I can move more dirt in a day with this Baker Gradebuilder than any other blade built . . . and go home only half as tired at night, it's that easy to handle."

You, too, know what you want in a blade: (1) *Performance in yardage;* (2) *ease of operation;* (3) *durability.* Ask your Baker, A-C Dealer to *prove* all three features . . . he'll be glad to demonstrate!

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Material for a section of the embankment for the new superhighway is placed by the Euclid at the right as a Caterpillar tractor-dozer levels the fill.

Joy drilling equipment was serviced at the job site by this Joy Mfg. Co. mobile unit.

presented a special problem because of frequent rains and rugged terrain.

Supervisory personnel traversed the job in four-wheel-drive jeeps over roads cut into the mountain sides. The going was rough, and crews were often needed to clear the routes of rock slides. Teer's equipment was fitted with radio.

Culverts Subcontracted

The Agnew Construction Co. was awarded a subcontract for two reinforced-concrete arch culverts and a reinforced-concrete box culvert. The concrete plant was set up not far from the highway entrance. It consisted of a 1-yard Ransome mixer and a CMC bin with a 50 and two 60-ton-capacity bins. A ½-yard Link-Belt crane loaded the bins.

Agnew excavated for the culverts with a Caterpillar D8, an Allis-Chalmers HD-7, a ¾-yard Koehring, a 1½-yard Northwest, and a 1¼-yard Bay City. Six Jaegers, ranging in size from 2 to 4 inches, were used to pump water out of the foundation excavations.

Trucks transported the concrete from the plant to the pouring sites. Most of the pouring was done by five Insley and two Blaw-Knox 1-yard buckets moved by cranes. Some of the concrete on the arches was handled by a ½-yard Rex Pumpcrete machine.

Four Mall vibrators were used. Air was supplied by a Gardner-Denver 365, a Schramm 310, and a Jaeger 160. There was 4,164 linear feet of asphalt-coated corrugated metal pipe in the job in diameters ranging from 18 to 60 inches.

Quantities and Personnel

The quantities of excavation and of materials used were:

Unclassified roadway excavation	1,610,000 cu. yds.
Embankments, compacted and placed	719,000 cu. yds.
Channel excavation	71,000 cu. yds.
Earth excavation	5,800 cu. yds.
Rock excavation	4,750 cu. yds.
Class A concrete	2,170 cu. yds.
Class B concrete	1,900 cu. yds.
Concrete cribbing	19,000 cu. ft.
Reinforcing steel	277,000 pounds
Stone fill for crib wall	3,770 cu. yds.

Ray Cavendish is executive director of the West Virginia Turnpike Commission; C. H. Peterson is the project engineer for Howard, Needles, Tammen & Bergendoff, New York, N. Y., design and supervising engineers. Gannett, Flemming, Corddry & Carpenter, Inc., Harrisburg, Pa., Section 3 engineers, were represented by John R. Deitz, chief of the highway, bridge, and airport division; Lewis S. Harvey, project manager; Bernard D. Johnson, construction engineer; and Lee P. Paterson, resident engineer.

Nello L. Teer Co. was represented by William Burton, general superintendent, and T. Vernon Smith, office manager. Gene Ramsey and Earl Dunn were the company engineers. THE END

Buried under dirt and sand, TIMKEN® bearings keep digger digging

HIDDEN under the pile of dirt indicated by the arrow in the picture is a 4-wheel truck that backs up the flying buckets of this Buckeye Model 314 Ditcher, made by Gar Wood Industries, Inc.

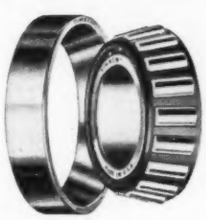
That dirt is one of the reasons the truck wheels are mounted on Timken® bearings. Because their tapered rollers permit pre-loading, they eliminate end-play in the axle. And their extreme accuracy keeps housing and shaft precisely concentric. As a result, the face-type oil seals can effectively seal out both dirt and the water encountered in digging ditches up to 6 feet deep. By the same token, oil is sealed in—so well, in fact, that these Timken bearings are normally lubricated only once every 1,000 hours.

These truck wheels, situated as they are directly behind the point where the buckets hit solid dirt, must also absorb the shocks of boulders and the digging action itself. But Timken bearings are ready for such shocks. Case-hardened rollers and races are both hard enough to resist wear and tough enough to take shocks and come back for more. And line contact between rollers and races gives Timken bearings all the extra capacity they need.

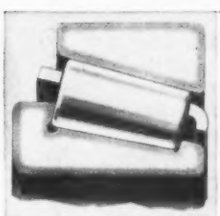
All told, 18 Timken bearings help prolong the life and reduce the maintenance of this Buckeye Ditcher. Normally, Timken bearings last the life of the machine itself. Specify them on the machines you build or buy. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best

How **GAR WOOD INDUSTRIES, INC.** mounts ditcher truck axles on Timken bearings. Note how flush-type lubrication system sends steady flow of oil through bearings.



TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



HARD ON THE OUTSIDE, TOUGH ON THE INSIDE

Rollers and races of Timken bearings are case-carburized to give a hard, wear-resisting surface and a tough, shock-resisting core. Result: longer bearing life.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

NOT JUST A BALL ○ NOT JUST A ROLLER ⬭ THE TIMKEN TAPERED ROLLER ⬭ BEARING TAKES RADIAL ⓡ AND THRUST →ⓣ← LOADS OR ANY COMBINATION →✳←

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RICE

Engine belt and electric driven pumps with many new features to give you outstanding performance at low cost. A.G.C. rated. Write for special bulletins.

RICE PUMP & MACHINE CO.
220 N. Park Avenue, Belgium, Wisconsin

The new Duff-Norton air hydraulic jack.

New Air-Hydraulic Jack

■ A new jack that uses 80 to 100 pounds of compressed air to operate a separate hydraulic pump has been announced by the Duff-Norton Mfg. Co., Preble Ave., Pittsburgh, Pa. The combination jack and ram is offered with a choice of four hydraulic rams that are from 4½ to 28 inches in length and which can move 30 tons in any direction a distance of from 2 to 20 inches.

The air motor is mounted on a portable buggy and comes complete with 50 feet of ½-inch air hose and 6 feet of flexible hydraulic hose. The pump, buggy, and accessories weigh 150 pounds. Among the advantages of the new jack is a safety feature that permits the operator to stand at a distance in the event the ram should slip while under pressure.

For further information write to the company, or use the Request Card at page 18. Circle No. 762.

Device Locks Braces To Scaffold Frames

■ A new type of lock for securing diagonal cross braces to the frames of its Trouble Saver sectional steel scaffolds has been announced by the Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City 1, N. Y. Called the SlideLok, the new device features a self-locking action said to reduce erection and dismantling time.

The lock uses gravity action that makes it almost impossible to leave the lock open. Simply raising the device and then allowing it to drop into locked position secures either one or two diagonal braces to the scaffold frame. A simple design is said to minimize the effects of mortar, paint, dirt, and rust. The lock operates easily in cold weather.

For further information write to the company, or use the Request Card on page 18. Circle No. 759.

Service for Equipment

■ Service available to owners and prospective purchasers of Caterpillar equipment is described in a new booklet from the company. The illustrated brochure discusses the service methods used both in the shop and in the field by Caterpillar dealers. Included is a map of the United States, Canada, and Mexico showing the location of the company's dealers, parts depots, and factories.

To obtain this literature write to the Caterpillar Tractor Co., Peoria 8, Ill., and request Form D381, or use the Request Card at page 18. Circle No. 685.

New Welding Unit

■ A welder designed to further the advances made with the shielded inert-gas metal arc process by maintaining stable welding conditions regardless of arc variations is announced by the Miller Electric Mfg. Co., Appleton, Wis. The rectifier-type 500-amp welder consists essentially of a closely coupled three-phase transformer, a saturable core-type three-phase reactor in the primary circuit, control windings, and a selenium rectifier stack.

Remote control is available for either a foot or hand-operated unit and provides a wide choice of welder location. Any number of the Sigma welders can be paralleled to produce greater output. A panel-mounted voltmeter and ammeter can be supplied. The rectangular drip-proof cabinet has removable sides and top cover that permit ready access to all parts.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 737.

A newly announced Miller welder.

Let's roll up our sleeves today and give to the Red Cross Blood Bank.

When nature's against you...

that Pioneer Edge is

C. R. PILCHER
GEN. SUPERINTENDENT
UNION CONSTRUCTION CO.

Paul Bunyan OF CRUSHERMEN

● Up in Montana, C. R. Pilcher and his Pioneer 46VE Plant are fast becoming a legend.

Take portability, for instance. Pilcher can move his plant to a new location, set up, and be in full production in 2 shifts . . . if it's within 10 miles of the original site.

They tell how last year, when floods hit Montana, Pilcher and his plant were almost continually on the move. During the emergency they produced 20,000 tons of material from 7 different pits. Once they completed a move, set up, and were crushing within 11 hours.

They've set some fabulous non-stop production records, too. On a heavy crushing job at Polson, Montana, they lost only 1½ hours operating time on a 30,000 ton job with ¾" material at an average rate of 125 tph. On an 18,000 cubic yard job, they averaged 123 yards per hour on ¾" crushing and 156 yards on 1" minus. Fantastic? Not at all. Simply the case of a skilled operator who knows how to take advantage of Pioneer's *extra* capacity and *extra* stamina . . . in other words, the PIONEER EDGE.

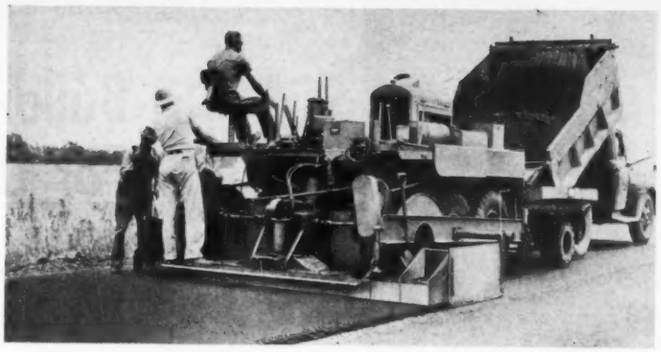
BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer *Continuflo* **EQUIPMENT**

Rubber-Tire-Mounted Bituminous Paver

■ A tire-mounted bituminous paver-finisher is announced by the All Purpose Spreader Co., P. O. Box 105, Fuller Road, Elyria, Ohio. The Model PF-90 will spread, level, and tamp hot or cold bituminous mix in one continuous operation. It is also being used in paving pugmill-mixed lean cement mixtures. No forms are required for any of these paving jobs.

The manufacturer states that the rubber tires also provide good traction on a hard surface with tack coat or on spongy subgrades and other tricky surfaces. Back-tracking is faster and quieter, and newly laid surfaces can be crossed sooner. The rubber tires also provide the traction necessary to push heavy dump trucks. An indirect benefit is the smoother action in starting and stopping with less wear on pins, bushings, and other parts.



The new Apsco Model PF 90 bituminous paver-finisher features rubber-tire mobility.

Other design features are a longer wheelbase and a floating-type screed which make possible fewer passes where there are numerous dips and bumps in the subgrade. The unit has a large-capacity low-cut hopper to accommodate large dump trucks, dual drag-type conveyors, vertical adjustment of the cross augers, and dual controls.

Over-all length of the finisher is 19 feet, and the width is 10 feet. Approximate weight is 20,000 pounds. Spreading width is 8 feet to 13 feet, and spreading depth is up to 10 inches. Eight working speeds range from 18 to 74 feet per minute while travel speed is 5½ mph.

For further information write to the company, or use the Request Card at page 18. Circle No. 734.

ge is on your side

Pioneer plant overcomes obstacles on mountain job

IT'S rugged country up in the Bitteroot Mountain wilderness where Diamond Match Company decided to build its road. Short summers limit the construction season . . . mean bears make it hard to keep camp cooks . . . and rock is so hard and abrasive that even tungsten carbide bits often wear out in less than 80′ of drilling, (they're usually good for 500′ or more). It's he-man country and calls for "he-man" equipment.

That's why Union Construction Company, of Missoula brought in its PIONEER 46VE plant to produce the material needed for surfacing the new road Diamond Match had pushed from Superior, Montana, 20 miles up Trout Creek Canyon to the Idaho state line.

U.S. Forest Service specifications called for 15,000 tons of ¾″ minus, 32,000 tons of 1″ minus, and 30,000 tons 1½″ minus material. And extreme hardness wasn't the only problem; the rugged terrain called for unusual portability, and the short season demanded high crushing capacity with minimum down time.

But once again, the PIONEER EDGE paid off. With virtually 100% crushing, Union's plant turned out as much as 150 tph of ¾″ material, while a sub-contractor, Glenn Geery, of Missoula, also produced high tonnage with an older PIONEER plant.

The job was completed on time. Another triumph marked up for PIONEER equipment.

THE Edge THAT COUNTS

Few crushing plants will ever have to tackle an assignment as difficult as the one described above, which at the time of writing, had crushed well over 500,000 tons of material. But whether the job is tough or easy, the contractor who has the PIONEER EDGE on his side knows he can count on greater output with less upkeep . . . important items where the bidding is close.

PIONEER ENGINEERING WORKS, INC.
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☐ JAW CRUSHERS	☐ GRAVEL PLANTS	☐ APRON FEEDERS
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☐ ORO FEEDERS	☐ BITUMINOUS PAVERS	☐ CONTINUFLO CONVEYORS

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Couplings and Fittings For Aluminum Pipe

■ New couplings and fittings for grooved-aluminum pipe are announced by the Gustin-Bacon Mfg. Co., 210 W. 10th St., Kansas City 6, Mo. The aluminum Gruvagrip couplings and fittings are suitable for use wherever extremely light high-pressure pipe systems are needed. They are available in 2 to 8-inch sizes. The 8-inch aluminum coupling weighs less than 11½ pounds complete.

The new couplings absorb expansion and contraction, shocks, ground motion, and vibration. They remain leakproof under end pulls of up to 46,000 pounds. The couplings, which can be removed and re-used repeatedly, permit a layout misalignment up to three degrees. They can withstand temperatures between plus 200 degrees and minus 65 degrees F.

The couplings are suitable for permanent or temporary lines carrying air, vacuum, gases, water, oil, and chemicals. The sealing gasket is of a resilient synthetic rubber designed to resist the deteriorating effects of oil and chemicals. The couplings are available in 45 and 90-degree elbows, and in tees, caps, and nipples.

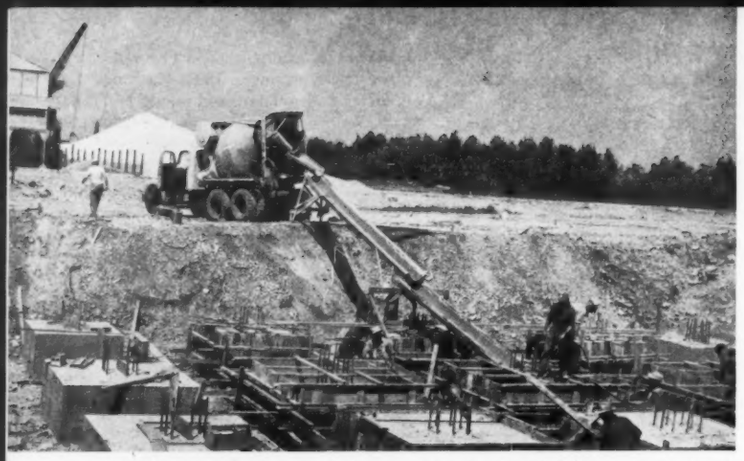
For further information write to the company, or use the Request Card at page 18. Circle No. 758.

Data on Spur-Gear Hoist

■ A lightweight spur-gear hoist of formed steel construction is illustrated in a bulletin from the Coffing Hoist Co., 800 Water St., Danville, Ill. The Challenger hoist features portability and resistance to shock-load breakage.

Included in the bulletin is a cut-away drawing indicating the hoist's simplicity of design and the resulting ease of servicing. Dimension drawings and specifications are used to describe the ½, 1, and 2-ton models.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 764.



A Worthington truck mixer mounted on an International truck delivers concrete for the footings of the screen house.

Builds Loading Pier For Limestone Plant

FIVE OF THE NATION'S steel companies — Bethlehem, Great Lakes, Jones & Laughlin, Youngstown, and Republic—have joined together in the construction and the future operation of a huge limestone quarry complete with crushing, screening, storing, and loading facilities. When it goes into operation in the spring of 1955, the Presque Isle Corp. stone plant near Alpena, Mich., will have a capacity of 4,700,000 tons of limestone per 35-week season, based on 40 hours of operation per week.

Located at the site of an abandoned quarry, the plant will occupy a 2,350-acre area along the shore of Lake Huron about 15 miles north of Alpena. Experts have estimated that there is at least a 77-year supply of limestone on the present site and undoubtedly a great deal more in the surrounding areas.

Construction of the plant is being done by the joint venture of the Hunkin-Conkey Construction Co. and the McDowell Co., Inc., both of Cleveland, Ohio. The plant was designed by John F. Meissner Engineers, Inc., Chicago, Ill., who is also serving as owners' representative and supervisor during construction. The work got under way last April.

The project includes dewatering and reactivating the old quarry, erecting a dock for lake ships, and constructing a crushing and screening plant. The contract also calls for the building of an office, machine shop, stores-building, truck service shop, and other incidentals. A belt-conveyor system will transport materials from the quarry, through the crushing and screening plant, to the stockpiles. Other underground conveyors will tap the stockpiles and carry the aggregate out along the L-shaped dock to the holds of the steamers for the trip to the steel mills.

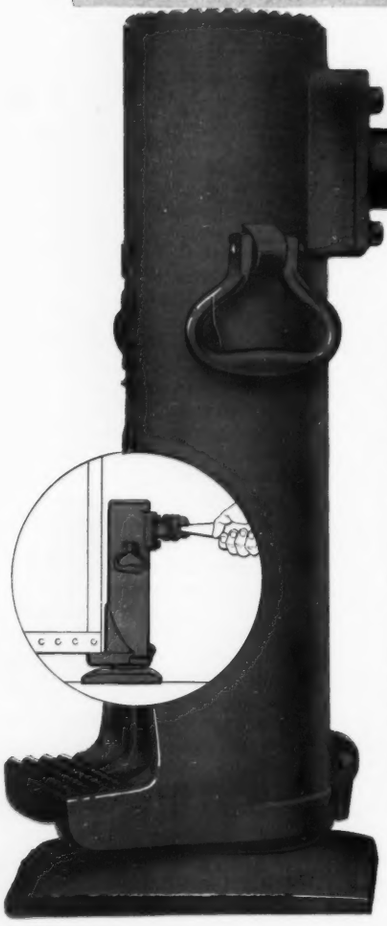
Dock and Harbor

The lake shore in the vicinity is quite regular, with few indentations to aid in sheltering a harbor. The solid rock bottom has a gentle slope, making it necessary to extend the shore arm of the dock approximately 1,000 feet out into the lake in order to have a minimum water depth of 25 feet at the loading dock.

The shore arm extends straight out into the lake. At the end of this arm, the 1,000-foot loading dock projects at a right angle. Ships will load on the shore side of the loading arm and will thus be protected from storms coming out of the north or west.

Basically, the shore arm is a huge pile of rock and gravel 54 feet wide on top and sloping into the lake bottom at the material's natural angle of repose. The arm has a core of beach gravel overlaid with a heavy riprap of limestone from the quarry.

Why the "Rigger's Pal" is the most popular jack with construction men!



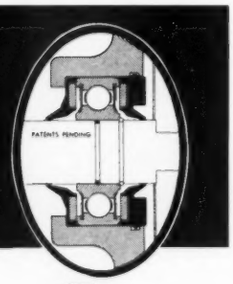
The "Rigger's Pal" is the most popular jack with construction men because *it can use its foot as well as its head.* This rugged screw jack is available in 15, 25, 35, and 50 ton capacities, with raising heights of 10 to 13⅜ inches. It will not settle or creep under heavy loads even after long periods of time. Safety signal indicates when safe limit of raise has been reached.

For those heavy lifting jobs, bridge and wrecking work, moving heavy machinery and equipment, get the complete details on this and other Duff-Norton jacks. Call your distributor or write the world's oldest and largest manufacturers of lifting jacks for catalog 203S-1, The Duff-Norton Manufacturing Co., P. O. Box 1889, Pittsburgh 30, Pa. Canadian Plant—Toronto 6, Ontario.

DUFF-NORTON Jacks

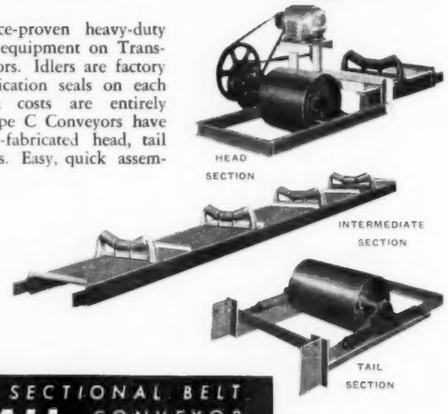
"Giving Industry A Lift Since 1883"

RE-LUBRICATION "DESIGNED OUT!"



Four Seals—two on each side of each bearing.

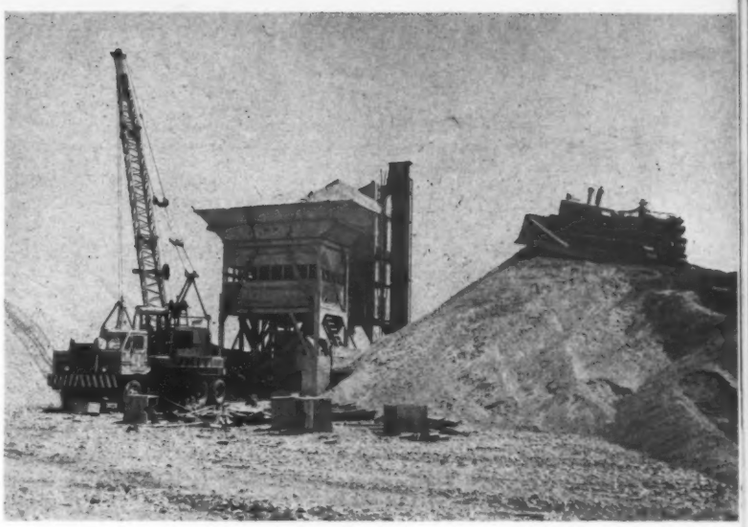
"Tran-Seal" is a service-proven heavy-duty idler which is standard equipment on Transall Type C Belt Conveyors. Idlers are factory lubricated, have 4 lubrication seals on each bearing. Re-lubrication costs are entirely eliminated. Transall Type C Conveyors have pre-engineered and pre-fabricated head, tail and intermediate sections. Easy, quick assembly to fit job.



For details write TRANSALL, INC., 119 N. 11th St., Birmingham, Ala.

TRANSALL SECTIONAL BELT CONVEYOR SYSTEMS

Contractor also erects crushing and screening facilities and reactivates Michigan quarry for five steel companies



A Unit truck crane charges the bins of the Blaw-Knox batch plant while the stockpiles are maintained by an Allis-Chalmers HD-20 with Gar Wood dozer. *C. & E. Photo*

The outer layer is made up of pieces about one cubic yard in size. The loading dock arm is a series of circular sheet-pile cells driven to rock and filled with beach gravel. On the shore side, where the ships will tie up, the lake bottom will be dredged to a minimum depth of 25 feet. The lake side will have the same type of heavy riprap protection.

Beach gravel from several deposits along the shore is loaded by two Manitowoc 3900 draglines using 3-yard Williams buckets. It is hauled to the dock in six end-dump and six bottom-dump Euclids. An Allis-Chalmers HD-20 tractor with Gar Wood dozer levels the fill as it is placed. A Caterpillar No. 12 motor grader maintains the haul roads.

Riprap

Rock for the riprap comes from that area of the quarry which is being excavated to make room for the primary crusher and its belt-conveyor system. A Joy rotary shot-hole drill, electrically powered, drills holes 6 inches in diameter for blasting. The drill, which will be used in the quarrying operations, penetrates the limestone at the rate of one foot per minute.

Blast holes are loaded with Hercules 65 per cent Gelamite and shot so as to obtain the greatest possible amount of large-size stone. In the quarry, a Lima Model 1201 shovel with a 3½-yard bucket loads the rock into the Euclids. The "Eucs" haul to the dock and dump their loads over the gravel to form the protective outer layer.

(Continued on next page)

Yours for the Asking

Further information or descriptive literature can be secured from any advertisers in this issue of CONTRACTORS AND ENGINEERS. Just write name of manufacturer and product of interest to you on the extra line provided on the post card facing page 18, fill in your own name and industry connection, mail to us and we'll do the rest.

CONTRACTORS AND ENGINEERS

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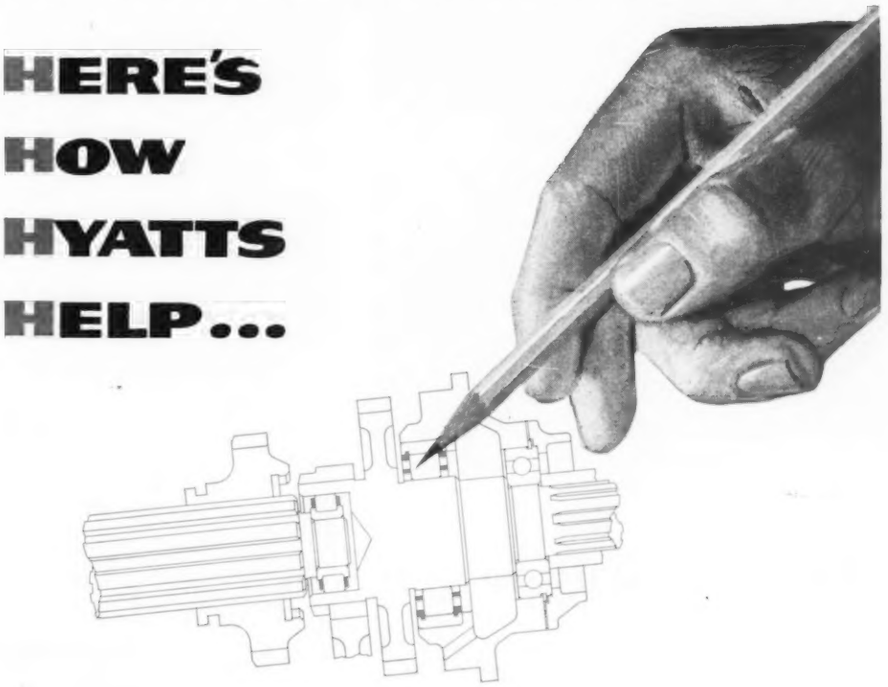
when LIMITED SPACE is a design factor

HERE'S HOW HYATTS HELP...



Sometimes a fraction of an inch is the difference between a simple design modification and costly re-tooling. And the engineer who is thoroughly familiar with Hyatt Roller Bearings will know a lot about how to save those fractions. He'll know, for example, that to gain greater shaft rigidity with the same size housing, he need only check his Hyatt catalog for a separable inner race type of bearing. This type—available in a wide range of sizes—may be applied with the rollers operating directly upon the surface of a suitably hardened and ground shaft. Thus, a larger-diameter shaft may be used without sacrificing bearing capacity, or a larger-size bearing may be used without changing the size of the shaft. For a copy of Hyatt's latest catalog, No. 150, write to Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

STRAIGHT BARREL TAPER

Limestone for the dock is loaded into an end-dump Euclid by a Lima 1201 shovel with 3½-yard dipper. *C. & E. Photo*

(Continued from preceding page)

A new Manitowoc 4500 crane with a 140-foot boom places the pile cells. Using a template 54 feet in diameter, the sheet piling for the first few cells was driven through the gravel core of the dock down to the solid rock bottom. Cells for the remainder of the dock are being set in place and then filled. The dock arm contains 23 of these cells with piling varying in length from 30 to 45 feet, according to the depth of the water.

Rock excavations were required for several conveyor tunnels and for the building foundations. All the material excavated was used in building the dock. The drilling was done by Ingersoll-Rand wagon drills powered by two I-R 600-cfm Gyro-Flo compressors and one Worthington 500-cfm compressor.

One of the first operations when the work started was the dewatering of the old quarry. A 20-inch Westinghouse turbine pump with a 15,000-gpm capacity pumped around the clock for a full month to dry up the huge hole. The pump was driven by a 200-hp Fairbanks-Morse electric motor. Electricity was supplied by a pair of International UD-24 diesel generator sets phased together. Once the pit was dry, a 10-inch Deming deep-well turbine pump driven by a 30-hp electric motor removed the seepage.

Another early operation was the clearing of approximately 200 acres of brush and timber for the site of the buildings and storage area. Hand crews started the work but were soon augmented by Allis-Chalmers HD-20 tractors with dozers.

Concrete Plant

Concrete for building footings, floors, and tunnels is produced on the site in a Blaw-Knox batch plant and is delivered to the point of placement in truck mixers. Cement is delivered to the plant in bulk from Alpena. The plant has a capacity of 228 barrels of cement.

Sand and gravel aggregates are produced on the site and hauled to the batch plant by rented trucks. The 40-yard three-compartment aggregate hopper is charged by a Unit truck crane with an Owen clamshell bucket. Aggregate stockpiles are maintained by an Allis-Chalmers HD-20 tractor with dozer

Approximately 10,000 cubic yards of concrete will be mixed in the Blaw-Knox plant and delivered to the various structures in 4½-yard Worthington transit mixers mounted on International trucks with tandem drive axles. Since most of the pours are for footings or below-ground structures, most of the concrete is spouted directly from the mixers into the forms.

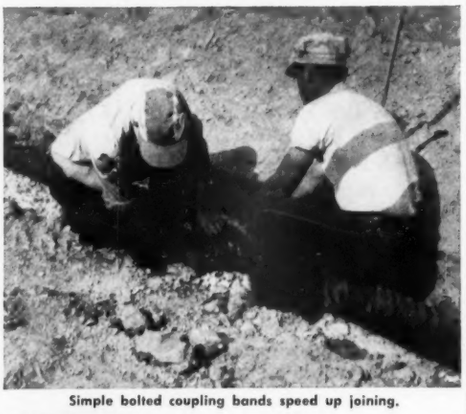
The majority of the buildings are designed with steel frameworks supported by concrete foundations, with sidewalls of concrete block. Two Bay City truck cranes—one rated at 25 tons and the other at 20 tons—are being used to place the structural steel and to hoist the mechanical equipment into place. Safeway steel scaffolding provides a satisfactory working platform for the men building the walls.

Equipment Maintenance

Lubrication and maintenance of the equipment is handled by a trained crew. A Chevrolet truck with a canvas-enclosed van body carries an Alemite lubricating system. Lubricants are dispensed directly from bulk containers through six hose reels. Air for the system is

Armco Perforated Pipe distributed along trench.

Workers set 20-foot section into place.



Simple bolted coupling bands speed up joining.

Backfilling follows right away. No waiting.

Perforated Pipe Job Goes Fast On Turnpike Project

Armco Perforated Pipe simplifies the job of getting rid of troublesome subdrainage water. And it's so easy to install!

The West Virginia Turnpike Project was no exception. The photos above show the four steps in installation. First, the pipe was distributed along the subdrainage trench; then construction workers lifted the pipe into position and added bolted coupling bands. Backfilling followed immediately, and the whole job hurried to completion.

With Armco Perforated Pipe, workers have only *one* simple joint to make every 20 feet—and the positive coupling eliminates danger of disjointing or malalignment. Handling? The 20-foot sections of 6-inch diameter perforated pipe weigh only 76 pounds. And transportation? A single truck can carry *almost a mile* of 6-inch diameter Armco Perforated Pipe.

Why not consider the time, labor and money-saving advantages of Armco Subdrainage Pipe for your next job? Diameters range from 6 to 21 inches. Write for details. Armco Drainage & Metal Products, Inc., 1714 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. Export: The Armco International Corporation.

ARMCO Perforated Pipe

Jobs Done Quicker, Cheaper

Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdily constructed instruments that will automatically show the operator the exact grade or slope on which he is working.

Order from Your Equipment Distributor Today

THE SLOPE-METER CO. OR EXCELSIOR, MINN.

supplied by a Curtis 21-cfm compressor. Three different grades of motor oil and three types of grease (pressure gun grease, transmission lubricant, and track roller grease) are available to the maintenance crew.

Routine maintenance and service operations, as well as major overhauls, are done right on the job. Lincoln arc welders assist in the repair of equipment, the erection of steel building frames, and the installation of mechanical equipment. An Onan 5-kw generator supplies power for many miscellaneous jobs.

Personnel

The five steel companies are represented on the project by John F. Meissner Engineers, Inc., with Chester E. Kukulski as superintendent. Louis Taglaiferri is project superintendent for Hunkin-McDowell, with Ray Terlaak as project engineer. Bill Wright looks after the grading operations, and Tom Forsythe has charge of piling. A maximum of 200 men will be employed at the peak of operations. THE END

Engineering Survey

Engineer employees are inadequately prepared in college to meet the tasks which lie ahead of them in industry, according to a report prepared by the Professional Engineers Conference Board for Industry in cooperation with the National Society of Professional Engineers.

The report is based on a survey of 1,400 engineers employed in industry and 200 industrial employers of engineers. Sixty-two per cent of the employers felt a readjustment of the curriculums of many engineering colleges is necessary, and 28 per cent of the engineers interviewed agreed with their bosses.

The report disclosed that 45 per cent of the engineers are not satisfied with their pay checks and advised a readjustment of salary scales. It also recommended a new approach to campus recruiting, with a more realistic presentation of the industrial facts of life to the job candidate.

"How to Attract and Hold Engineering Talent" is the third executive survey report of the PECBI. The first was "How to Improve Engineering - Management Communications", and the second was entitled "How to Improve Utilization of Engineering Manpower". All three are available from the PECBI at 1121 15th St., N. W., Washington 5, D. C. The price per copy is $1.00 to members of the National Society of Professional Engineers and $2.00 to nonmembers.

Shaker Conveyors For Abrasive Material

■ A line of shaker conveyors for hot or abrasive materials is made by the Goodman Mfg. Co., Dept. IMD-14, Halsted and 48th Sts., Chicago 9, Ill. These conveyors move materials horizontally, upgrade, or downgrade to distances up to 500 feet. Several materials can be transported separately with the feed and discharge arranged at various points along the trough.

Normal capacity is 100 tons per hour; rock, sand, and dirt are typical applications. Since the reinforced-metal troughing is both heat and abrasion-resistant, these conveyors are also adaptable to work with cement, lime, and gypsum.

Powered by 10 to 20-hp electric motors or 10 to 25-hp air motors, the Goodman Shaker conveyors can be supplied with trough sections ranging from 12 to 36-inch widths, 6 to 16-foot lengths, and 6 to 18-inch depths. Angle sections are available for operations in which the trough line turns.

The Goodman shaker conveyors feature a special flywheel motor that prevents stress in the pan from producing excessive stress in the drive unit.

For further information write to the company, or use the Request Card at page 18. Circle No. 801.

IT'S JUST THAT SIMPLE. There's only one reason in the world why 2 out of 3 wire rope users in the excavating and construction field prefer Roebling wire rope . . . *it costs a lot less on the job than any other.*

For maximum wire rope efficiency and economy, call your nearest Roebling office for a Field Man. He'll recommend the best ropes for your machines.

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Heavy Hauling Trailers

■ A line of heavy-duty trailers is illustrated in a booklet available from Rogers Brothers Corp., 108 Orchard St., Albion, Pa. The Pioneer trailer line features the company's power-lift detachable gooseneck that is available on any of the standard drop-deck trailers made.

According to the literature, the most popular of the Rogers standard trailers is the Type T which has eight large tires on two longitudinally rocking members. This model, only 8 feet wide, is available in a drop deck or level deck in capacities from 15 to 35 tons. A unit with 16 tires that rock laterally and longitudinally to distribute the load is the Type D, made in capacities up to 75 tons.

For extra high or unusually wide track-mounted loads where headroom clearance is a problem, the company offers a girder-type trailer, Type I, with four or eight rear wheels, and a 75 to 90-ton capacity.

Other models offered include Type H, with eight tires on two laterally rocking units; Type S, a smaller trailer that mounts four tires on a straight axle; and the Tag-A-Long trailer that holds light and medium loads using a dump truck as the tractor.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 695.

Use Swenson self-feeding material spreaders for fast, easy application of salt, chloride, sand, cinders, gravel or a combination of these materials

Free Information

Swenson Spreader & Mfg. Co.

Lindenwood, Illinois

Instrument Locates Buried Pipe and Cable

■ An instrument for locating buried pipe and cable is made by the Wilkinson Products Co., 3987 Chevy Chase Drive, Pasadena 3, Calif. The main components of the Wilkinson line locator are the transmitter, receiver, and a mounting handle.

The instrument is used by one man. As the operator crosses any metal line at a right angle to its course, the line will register audibly and visually when the rear unit or transmitter is directly over the line. Enlargements of a pipeline, such as gate valves, corporation cocks, short stubs, and special couplings may be located. A depth gage mounted on the receiver enables the operator to determine the depth of lines.

The receiver and transmitter, each weighing 5 pounds, are mounted on opposite ends of a long handle. The handle, made of wood to offer no electrical interference, will not wear at the mounting points so that loops will stay in balance once they are aligned. A knurled adjusting nut is used at the receiver end of the handle to align the loops in balance. This enables the operator to put the instrument into use quickly.

The loops are built into and are an integral part of the instrument case. The circuitry and component arrangement are designed to expedite servicing of the instrument. The latest type of miniature tubes are used together with regular flashlight batteries. All tubes and batteries are standard stock items.

The instrument can be used inductively and conductively. It can be operated with both units either separated from or assembled on the handle.

For further information write to the company, or use the Request Card at page 18. Circle No. 790.

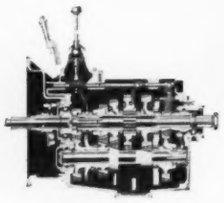
Drawing Pencils and Leads

■ Drawing pencils, drawing leads, and lead holders are described in literature from J. S. Staedtler, Inc., 53 Worth St., New York 13, N. Y. These Mars-Lumograph products are made in a wide range of degrees and in a variety of styles. A feature of the lead holder is a small sharpener concealed within the plastic push-button cap.

Drawing pencils are available in 19 degrees of hardness from ExExB through 9H. The drawing leads are made in 18 degrees from ExB through 9H.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 789.

bigger loads faster



Fuller 5-F-1220 Transmission

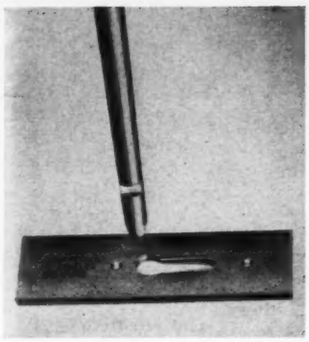
With payloads topping the 60-ton mark, modern material hauling is well-termed "the world's toughest trucking." That's why you'll find Fuller Transmissions—designed to *shift easy* and *deliver the torque* —in today's biggest off-highway trucks.

for example: This powerful Oshkosh Model W-2066-M Truck — shown loading up at the Jones & Laughlin open pit mine on the Mesabi — hauls 60-ton payloads up 10% grades. The constant mesh gears on its Fuller 5-F-1220 Transmission provide unusually **short, fast shifts** — and Fuller overlapped gears and relieved teeth ends **eliminate** gear stress concentration.

Fuller TRANSMISSIONS ®

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wis. • Western District Branch (Sales & Service—Both Divisions), 641 E. 10th St., Oakland 6, Cal. • Shuler Axle Co., Louisville, Ky. (Subsidiary)



A slotted keyplate slides into a second slot on the Taper Tye form clamp rod to lock it in place.

Concrete Form Clamps Use Keyplate Assembly

■ Form clamps featuring a tapered rod which can be driven from the concrete with only a light tap by a single jackhammer are made by the H. J. Krueper Co., 535 S. Clarence St., Los Angeles 33, Calif. The new Taper Tye form clamps use a fast-assembling keyplate instead of a threaded washer on the small end.

The rod is slotted on opposing sides of the small end. The keyplate has an inverted keyhole which slides over the rod and drops into the slots, locking in place. The tapered edges of the keyhole itself prevent binding in the slots when it is removed. The manufacturer points out that the keyplate construction eliminates makeup, insures fast stripping, and eliminates all re-makeup time.

Type A, with washers, is adjustable for 6 to 14-inch concrete and may be used with she-bolts for even greater extensions. Type B, employing the new keyplate, is adjustable for 6 to 13-inch concrete. Both models can be furnished with rods up to 61 inches long on special order. Either type may be purchased or rented.

For further information write to the company, or use the Request Card at page 18. Circle No. 783.

Seal Keeps Water Out Of Concrete Pours

■ Literature is available on a polyvinyl plastic waterstop made by Water Seals, Inc., 9 S. Clinton St., Chicago 6, Ill. Because it is available in three sizes, the Labyrinth waterstop is suitable for thin, medium, and heavy concrete wall construction. Its design makes for a water-tight seal between successive concrete pours.

The product may also be used in architectural concrete structures above ground level, for joints in foundation walls or between foundation walls and floors, and for hydraulic structures where shrinkage openings no larger than ½ inch are expected. Where no pressure is encountered, the seal is satisfactory for even larger shrinkage.

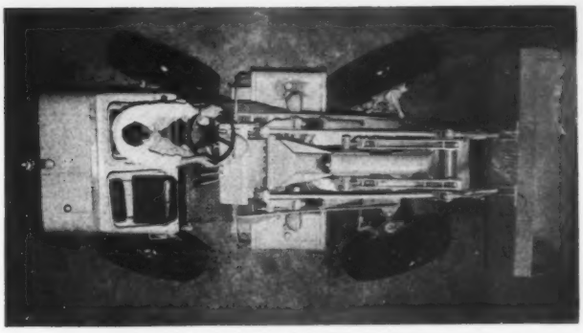
The product is described as flexible and impervious to chemical change. It is said to be easy to cut, splice, and install. It has been used as an effective seal in the construction of dams, swimming pools, hydroelectric plants, and water and sewage plants.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 782.

Tractor-Loader Has Four-Wheel Steering

■ Four-wheel steering is a feature of the newest Shoveloader made by the Baker-Lull Corp., 314 W. 90th St., Minneapolis, Minn. The manufacturer points out that the 19-foot-long tractor-loader uses the same steering principle as a hook-and-ladder fire truck to turn sharp corners. The machine has an inside turning radius of 7 feet 6 inches.

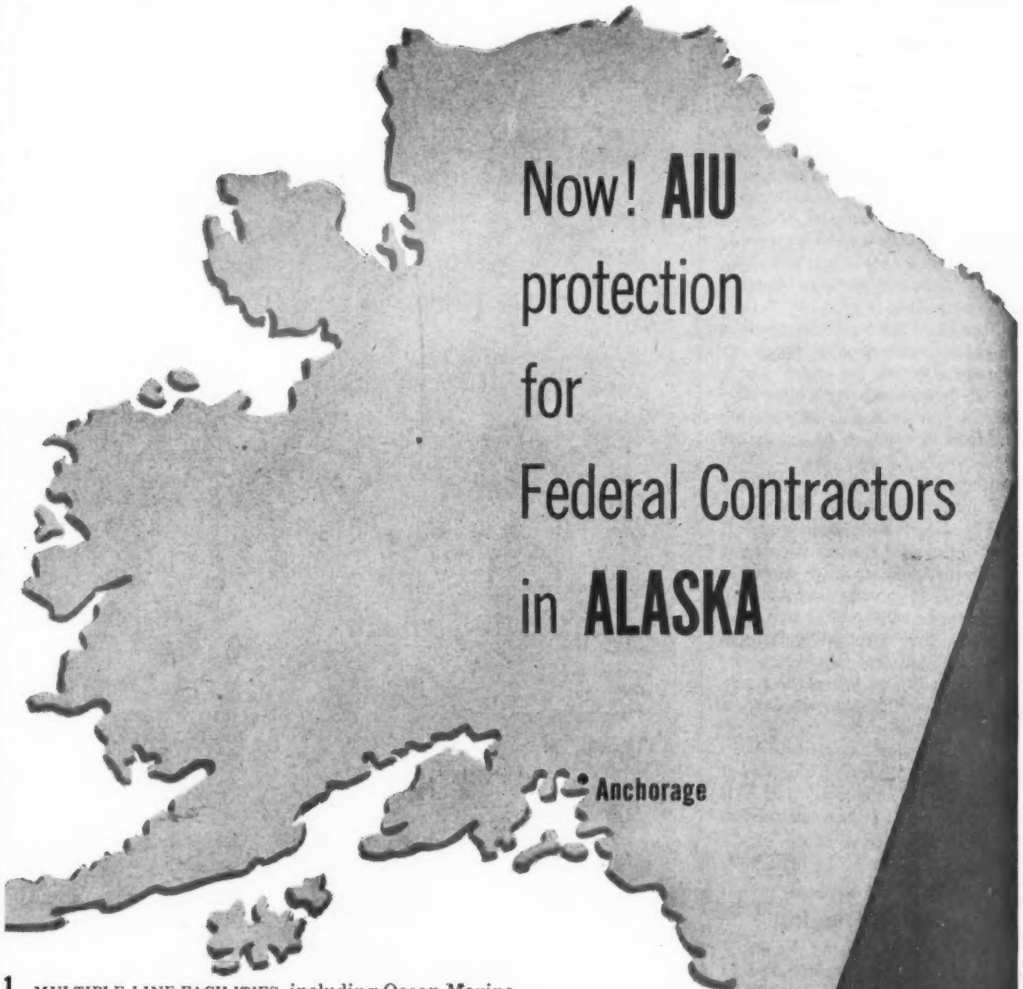
It is equipped with four-wheel drive and is designed to eliminate the need for a center differential in the transfer case. The unit's high-flotation tires and high underclearance permit operation in mud, snow, sand, and over uneven ground. The power steering on all four wheels, available optionally, also adds to the control of the unit.



This top view of the Baker-Lull Shoveloader illustrates the unit's four-wheel steering.

An added feature for operator safety is the location of the seat at the rear and above the engine, away from all moving parts. This driving position also gives the operator good visibility.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 779.



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A Caterpillar D397 diesel electric set supplies power for a Bucyrus-Erie shovel digging blasted rock on the New York State Throughway near Kingston.

Rows of L. B. Foster steel sheet piling retain the ground around the excavation for the basement of the Prudential Building in Chicago.

Turnpike Installs New Electronic Safety Sign

The Pennsylvania Turnpike Commission has installed a new experimental electronic device designed to further promote safety on the 327-mile superhighway. Called a "weather sensing" sign, it tells motorists what kind of weather to expect so that they may regulate their speed accordingly.

Automatically operated, the sign instantly translates unseen advance driving conditions into adequate, illuminated warning displays for approaching traffic. In letters one foot high, the sign tells whether the road is clear, wet, foggy, or covered with ice or snow. Three lines of three words each allow five different wordings. The sign can be seen from a distance of up to 200 yards.

Automatic operation is attained by a master sensing device which controls the word combinations. A highly developed electric eye senses obscuring fog or smoke, a moisture pickup detcts precipitation, and a temperature-sensing element works with the first two to determine whether there are rain, snow, or freezing conditions. When the roadway is clear, the sign displays a message to that effect.

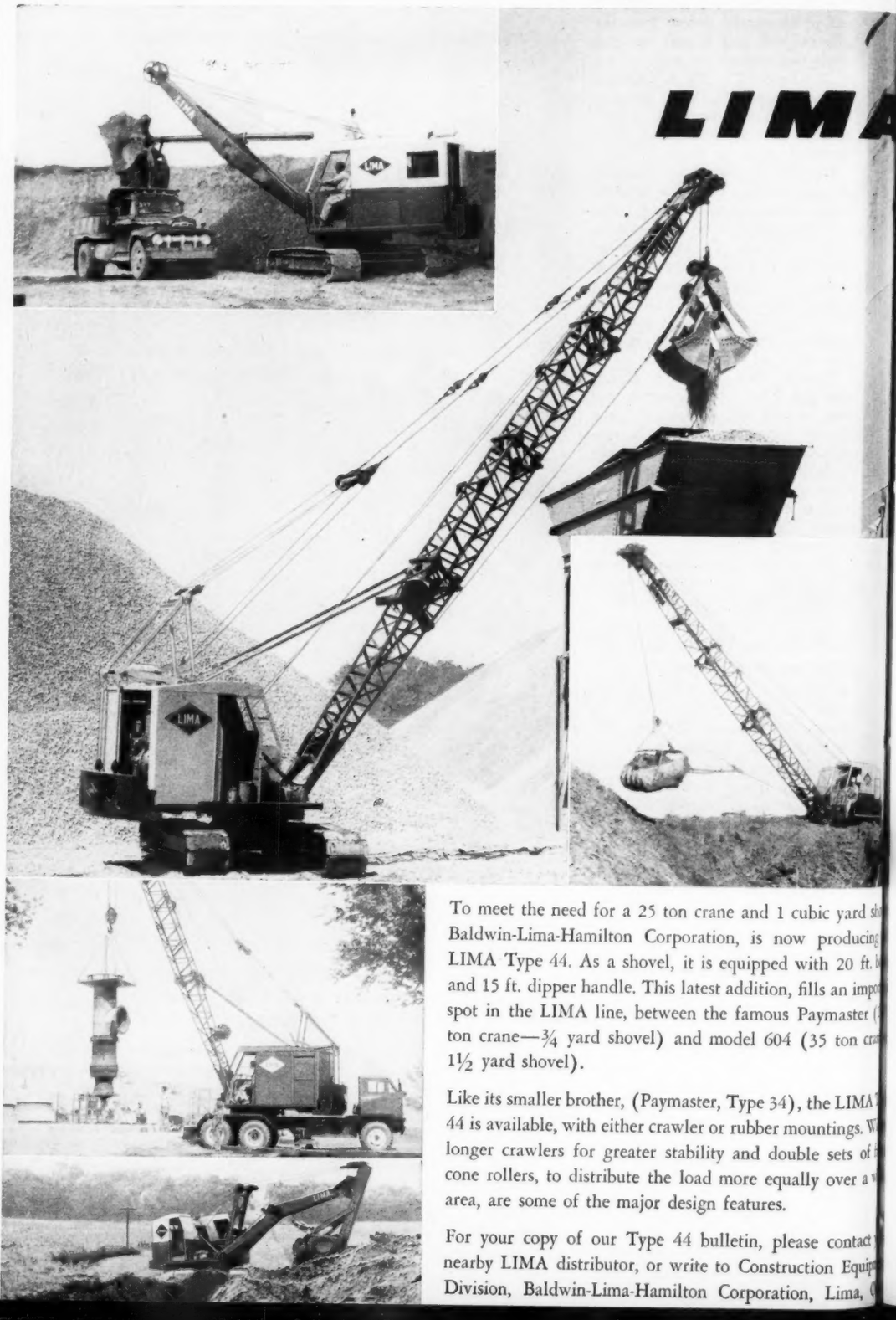
The first device has already been installed, and others will be added throughout the turnpike system if the initial trial proves successful.

Curb Trucks To Speed Snowplowing, Sanding

Truck operators using Pennsylvania highways have been asked to pull their rigs off the roadway during severe snow or ice storms this winter to facilitate plowing and cinder spreading by Department of Highways maintenance crews. Early reports indicate the request has met with unanimous acceptance.

"If these first few responses are indicative of the compliance of truckers with our request," Secretary of Highways E. L. Schmidt said, "the snow and ice season will find snow-sweeping equipment and cinder trucks encountering far fewer obstacles along the roadways during storms than they have in the past."

The efforts to secure voluntary cooperation with the department's snow-fighting forces were decided upon in the absence of any laws controlling the situation.



To meet the need for a 25 ton crane and 1 cubic yard sh
Baldwin-Lima-Hamilton Corporation, is now producing
LIMA Type 44. As a shovel, it is equipped with 20 ft. b
and 15 ft. dipper handle. This latest addition, fills an impo
spot in the LIMA line, between the famous Paymaster (
ton crane—¾ yard shovel) and model 604 (35 ton cra
1½ yard shovel).

Like its smaller brother, (Paymaster, Type 34), the LIMA
44 is available, with either crawler or rubber mountings. W
longer crawlers for greater stability and double sets of
cone rollers, to distribute the load more equally over a
area, are some of the major design features.

For your copy of our Type 44 bulletin, please contact
nearby LIMA distributor, or write to Construction Equip
Division, Baldwin-Lima-Hamilton Corporation, Lima,

A Bay City crane with a Gar-Bro bucket handles concrete for the second deck and roof pours on the Baltimore, Md., Memorial Stadium project.

One of a fleet of Tournapulls carries earth fill for the causeway leading to the new bridge across the 2-mile-wide Rappahannock River at Grey's Point, Va.

Type 44 ANSWERS DEMAND for one yard shovel and 25 ton crane

LIMA incorporates many quality features in versatile shovel—crane—dragline—pull-shovel and truck crane.

COMPARE! No other machine gives you as much as LIMA!

1. Big capacity drums and sheaves lengthen cable life, by reducing the need for double wrapping and sharp bends in cable.

2. All gears, smaller parts and shafts which are subject to extra wear, are flame or induction hardened for longer life.

3. Main machinery is placed well back of center of rotation, to eliminate excess counterweight.

4. Propel and swing gears and power take-off, are enclosed in sealed oil bath for dirt elimination and smoother, quieter operation.

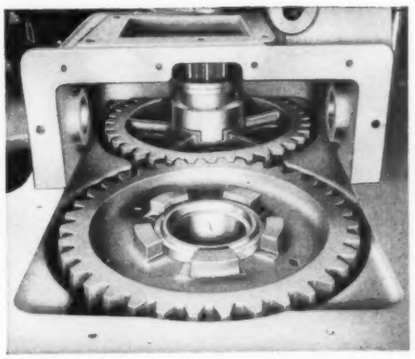
5. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.

6. Bronze bushings in tread, idler and drive rollers, are protected by piston-type dirt seal rings and retainers.

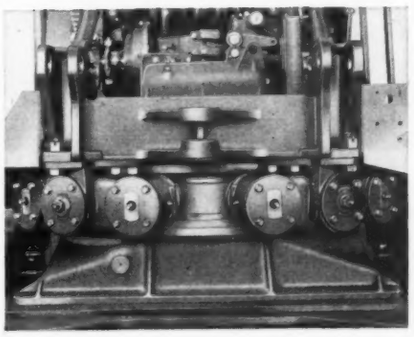
7. Torque converter (optional), automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.

Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts, to keep your LIMA on the job continuously.

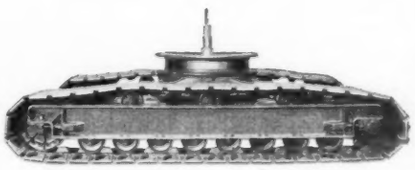
COMPARE and you'll specify LIMA for shovels, (¾ cu. yd. to 6 cu. yds.), cranes, (to 110 tons) and draglines (variable).



Propel and swing gears are enclosed in an oil bath, assuring smooth, quiet operation.



The conical rollers are the hook type, four in front and two in the rear. The four front rollers are arranged in pairs and each pair is mounted in an equalizer frame.



An extra long Crawler (15'-0" long,, 10'-8" wide), is available for work requiring greater stability.

DISTRIBUTORS IN ALL PRINCIPAL CITIES OF THE WORLD

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BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

Clark Mobile School Spurs Preventive Maintenance

As an extension of its factory training program for customer personnel on the maintenance and operation of fork trucks, towing tractors, Ross straddle carriers, and related material-handling equipment, the service division of Clark Equipment Co., Buchanan, Mich., in cooperation with the Clark dealer group, has organized a mobile service school to offer advanced training in the customer's "back yard".

The course subject matter concentrates on recent developments in material-handling equipment, such as the maintenance and operation of electric control systems and power drives developed recently by Clark—the Dynatork and the Hydratork. The school is touring the country, holding sessions in each dealer's area. School equipment is transported in a special tractor-trailer unit.

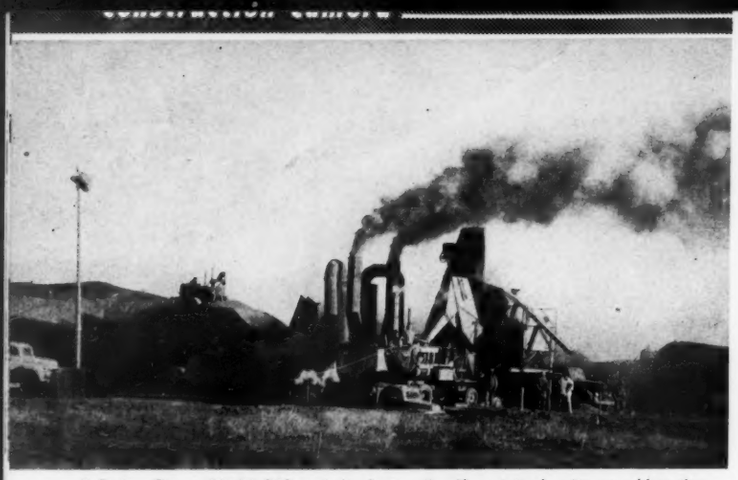
Special emphasis is placed on training mechanics and service personnel to think in terms of preventive maintenance. Class sessions are limited to 60 students and are held twice each day. The school remains in a particular location as long as the demand requires. It is expected to cover more than 20,000 miles in the first two years of operation.

BCEA Building Brochure

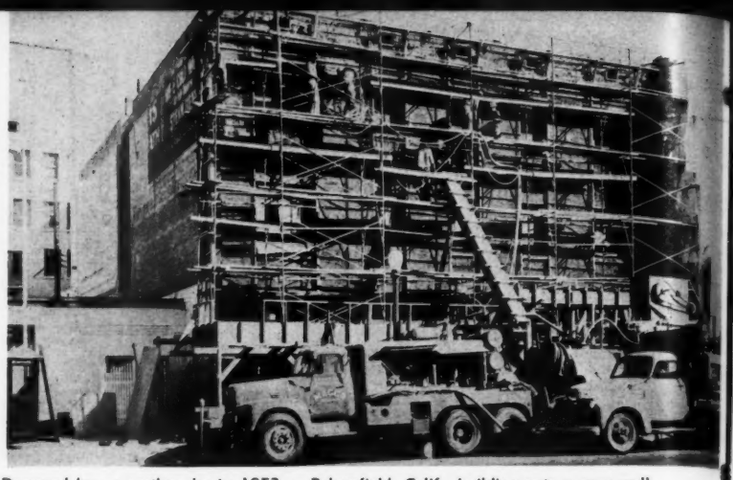
Designed to be of value to building investors, owners of building development projects, and the general public is a new brochure from the Building Construction Employers' Assn. of Chicago. Entitled "True Efficiency in Building", the publication contains 22 pages of pictures, diagrams, charts, and text. Almost 2,000 hours of research, extensive studies, and surveys went into its formulation.

The optimum-cost building check list presented in four pages covers almost every phase of the planning and work on building development projects. Included in the list are real estate and site considerations, master planning, building design and plan, taking of bids, preparation of supplementary detail drawings, actual construction, and final over-all cost considerations.

The brochure is being distributed without charge by the Promotion & Publicity Committee, BCEA, Builders' Bldg., 228 N. LaSalle St., Chicago 1, Ill.



A Barber-Greene Model 848 asphalt plant—all self-contained units on rubber tires—turns out hot-mix for a Glacier National Park job. The Nilson-Smith Construction Co., Great Falls, Mont., had dismantled the plant, moved it 170 miles to the park, and reassembled it in only four days.



Damaged by an earthquake in 1952, a Bakersfield, Calif., building gets a new wall, sprayed on by the Gunite process. The job is being done by the Macco Corp., Paramount, Calif. Air for the spraying operation is supplied by the GM diesel-powered Ingersoll-Rand rotary compressor at the curb.

New Chevrolet Trucks for '54

Loaded with brand-new advantages you need and want!

You'll get more work done in less time and at lower cost with new '54 Chevrolet trucks on the job. They bring you more new features . . . more big new advantages than any other truck on the road.

For example, you get new engine power in all models. The advanced "Thriftmaster 235" engine combines bigger displacement and higher compression with other new features to give you greater power and finer performance. The rugged "Loadmaster 235" engine offers increased strength and stamina for heavier trucking operations. The all-new "Jobmaster 261" engine* brings you extra reserves of high-compression power for hauling big loads on schedule.

In addition, you enjoy new and even greater operating economy. All three 1954 Chevrolet truck engines bring you the full benefit of thrifty high-compression power.

And there are many, many more new things you'll like about these great new Chevrolet trucks. New, roomier pickup and stake bodies let you haul more . . . save you time and extra trips. And they're set lower to the ground for easier loading and unloading. New truck Hydra-Matic transmission* lets you drive all day without shifting. It's offered not only on ½- and ¾-ton Chevrolet trucks, but on 1-ton models, too. New Comfortmaster cab with one-piece curved windshield and amazing new Ride Control Seat* offers the last word in comfort, convenience and safety.

Plan now to see your Chevrolet dealer and get all the facts about the new Chevrolet trucks for '54. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

Most trustworthy trucks on any job!

CHEVROLET

ADVANCE-DESIGN TRUCKS

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

THREE GREAT ENGINES—The new "Jobmaster 261" engine* for extra heavy hauling. The "Thriftmaster 235" or "Loadmaster 235" for light-, medium- and heavy-duty hauling. **NEW TRUCK HYDRA-MATIC TRANSMISSION***—offered on ½-, ¾- and 1-ton models. Heavy-Duty **SYNCHRO-MESH TRANSMISSION**—for fast, smooth shifting. **DIAPHRAGM SPRING CLUTCH**—improved-action engagement. **HYPOID REAR AXLE**—for longer life on all models. **TORQUE-ACTION BRAKES**—on all wheels on light- and medium-duty models. **TWIN-ACTION REAR WHEEL BRAKES**—on heavy-duty models. **DUAL-SHOE PARKING BRAKE**—greater holding ability on heavy-duty models. **NEW RIDE CONTROL SEAT*** eliminates backrubbing. **NEW, LARGER UNIT-DESIGNED PICKUP AND PLATFORM STAKE BODIES**—give increased load space. **COMFORTMASTER CAB**—offers greater comfort, convenience and safety. **PANORAMIC WINDSHIELD**—for increased driver vision. **WIDE-BASE WHEELS**—for increased tire mileage. **BALL-GEAR STEERING**—easier, safer handling. **ADVANCE-DESIGN STYLING**—rugged, handsome appearance.

**Optional at extra cost. Ride Control Seat is available on all cab models; "Jobmaster 261" engine on 2-ton models; truck Hydra-Matic transmission on ½-, ¾- and 1-ton models.*

MORE CHEVROLET TRUCKS IN USE THAN ANY OTHER MAKE!

Book of Famous Bridges

A second printing of Dr. David B. Steinman's "Famous Bridges of the World" has been published by Random House, 457 Madison Ave., New York 22, N. Y., as part of its Gateway Book series.

Dr. Steinman, an internationally eminent bride engineer, traces the development of the bridge from its beginnings in prehistoric times down to the great steel spans of today. Along with stories of great men such as the Roeblings, Dr. Steinman discusses the four types of bridges—suspension, arch, truss, and cantilever.

The book, which sells for $1.75, is illustrated by Kurt Wiese and includes a dozen pages of photographs of some of the most renowned structures.

Public Roads Report

The annual report of the Bureau of Public Roads, Department of Commerce, for the fiscal year ending June 30, 1953, is available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C., at 25 cents each.

The 74-page publication contains charts and text summarizing the work of the bureau during the year, covering construction, repairs, and research. Sections on the Inter-American Highway, highway safety activity, and factors affecting progress are also included.

SASGEN

New Electric-Powered **CHAMPION** **DERRICK**

Boom only can be supplied for use with old-style Mast and bottom

Single line cap. 300# @ 100 feet per minute.

Double line cap. 600# @ 50 feet per minute

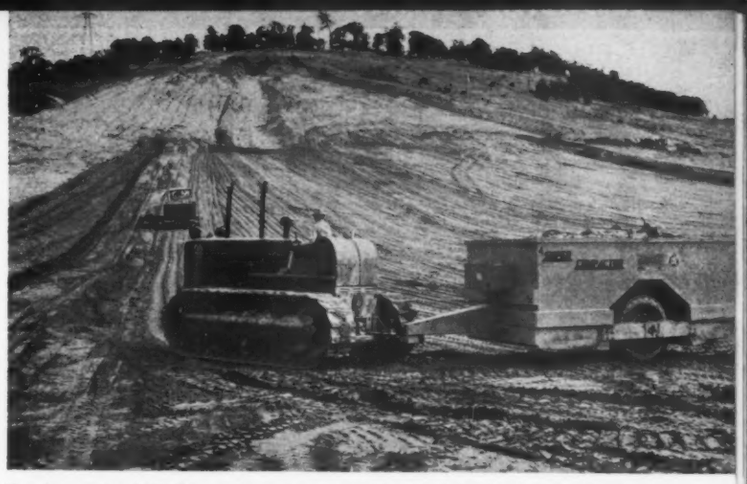
The most complete line of contractors' derricks, hoists, and winches. Write for catalog.

The Sasgen line is handled by leading equipment distributors everywhere.

SASGEN DERRICK COMPANY

3131 W. Grand Avenue, Chicago 22, Illinois

One of the newest and largest docks on the Ohio River is this one at the Weirton Steel Co., Weirton, W. Va. Built by the Dravo Corp., Pittsburgh, Pa., it provides additional capacity for loading and mooring barges. The job required the excavation of 45,000 cubic yards of rock from the river.



Two International TD-24 crawler tractors, owned by the Savin Construction Co., Hartford, Conn., tow O. J. Porter Super-Compactors to spread and compact fill in the construction of a reservoir to back up the new Folsom Dam near American River, Calif. These rigs are working on the wing and side dam.

N. Y. Traffic Shows Increase During 1953

Traffic in New York State for the first nine months of 1953 showed an increase of 11.7 per cent over the corresponding nine months of 1952, which was only 3.1 per cent above the totals for the same period in 1951. During September, traffic was 11.3 per cent higher than in September, 1952.

The information was determined from traffic counts at 141 strategically located stations throughout the state. Data is collected at ten district offiees and is tabulated and analyzed by the Bureau of Highway Planning in Albany.

A sharp increase in traffic was noted on Long Island, where four traffic-counter stations on major east-west highways recorded an average 22 per cent increase over the same nine-month period of 1952. This reflects the mushrooming of housing and commercial development on Long Island.

Although the over-all increase for the state was 11.7 per cent, traffic in February, March, April, and May exceeded traffic for the corresponding months of 1952 by percentages of 15.4, 16.1, 12.7, and 12.9, a reflection of the relatively mild winter which was experienced throughout the state.

Service lines go in fast with the new Ottawa backhoe on one end of the MM UTIL Wheeler and heavy-duty loader on the other. Unit trenches, loads, backfills and levels.

Speed service-line trenching with a cost-cutter on each end

Heavy-duty trenching for utility service lines becomes a faster, lower-cost job with this new Ottawa backhoe on one end of a Minneapolis-Moline Wheeler and loader on the other.

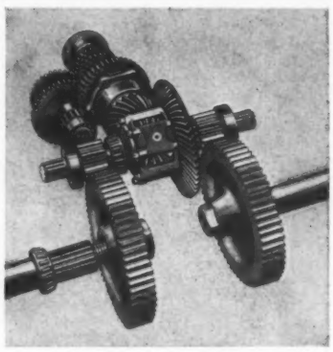
This Wheeler backhoe unit digs clean, square trenches, ditches and footings to a 9 ft. depth, offers bucket widths to 36". Backhoe reaches 15'4" for digging, 8'3" for dumping into highest trucks. Loader backfills and levels to complete the job with cost-cutting speed.

A complete line of unitized attachments makes full use of extra Wheeler power, greater Wheeler torque at moderate engine speed. Attachments include forks for loading and hauling, lifting cranes, excavating and loading buckets, dozer blades, scrapers, winches, snowplows, material handling and maintenance equipment for construction, mining, all industry.

With "high turbulence" gasoline or "turbo-cell" diesel engines, MM Wheelers deliver full-rated power, extra-heavy construction that pays off in longer unit life.

Before you buy any loader, see your Minneapolis-Moline dealer-distributor. Have him demonstrate to you that low-cost Wheelers will *return* your money *sooner*, *pay* you *longer*.

MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA



UTIL Wheelers pay you in longer tractor life with heavier construction, live rear axles 3 inches in diameter, bull gear final drive, greater bearing surfaces. Transmission and differential operate in a constant oil bath.

Mowing around job sites, along highways, in plant yards is a low-cost operation with this flexible hydraulic drive mower mounted on the 30 hp. RTI Wheeler.

This Wheeler and hydraulically-controlled scraper offer leveling accuracy in a low-cost package. Heavy-duty 3-point hitch controls scraping depth, provides rigid mounting.

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR:
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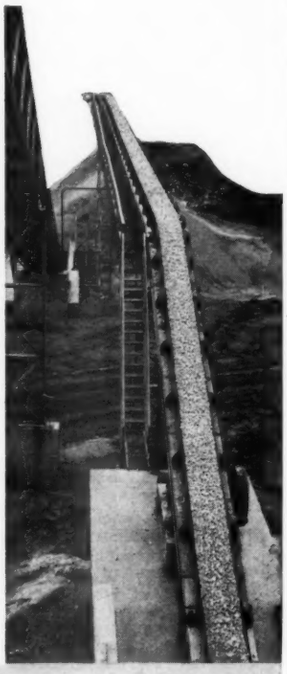
RICHARD DUDGEON INC. EST. 1850

789 BERGEN STREET BROOKLYN, N. Y.
• ST 9-4040 •

A Euclid end-dump is loaded by a 2½-yard Koehring shovel during grading work on the site of the new plant being built for the Ford Motor Co. at Mahwah, N. J. The Sam Braen Construction Co., Wyckoff, N. J., is handling the grading operations on the $17,000,000 project.

Two Lorain Moto-Cranes and a Lorain crawler lower a 22½-ton pre-assembled section of corrugated-metal arch drainage culvert into a trench near the Cleveland Memorial Shoreway. The pipe will carry city storm sewer water into Lake Erie. The Horvitz Co., Cleveland, Ohio, owns the cranes.

Why did this new crushed stone plant select U. S. Rubber belting?

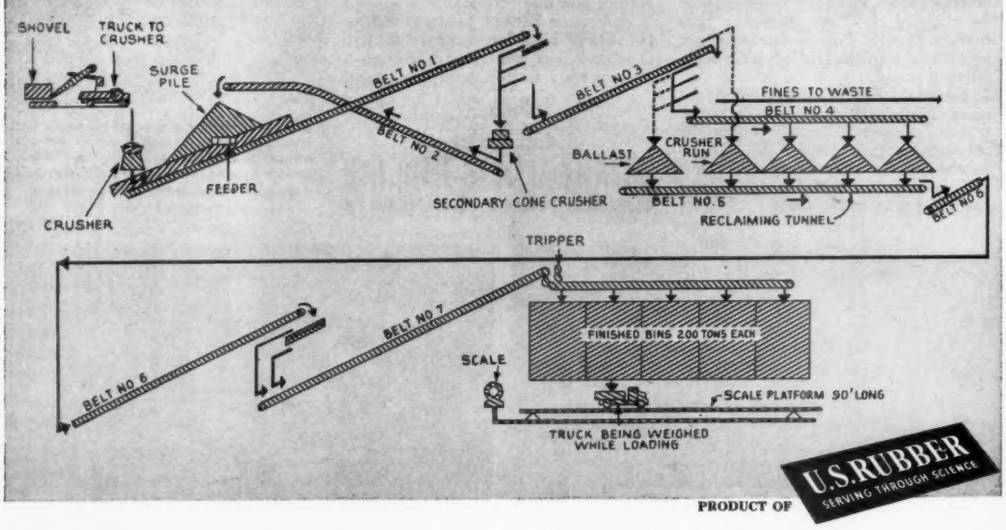


WHY? Because U. S. Rubber's Matchless Style XN and YN Conveyor Belts with patented Nylon construction give more strength and safety—with no increase in cost. The designers of this new plant wanted to get the greatest output at the most economical cost. They picked "U.S." for all the belts in the plant, totaling over 4440 ft. Their engineers worked as a team with the engineers of the equipment manufacturer and the engineers of United States Rubber Company—a "3-Way Engineering" system which invariably brings lower conveying costs. For any materials handling problem, get in touch with "U.S." specialists at address below.

U. S. Matchless® Style YN conveyor belt carrying crushed limestone rock from primary crusher to the vibrating screens.

U. S. Matchless Style XN conveyor belt carrying secondary crushed oversized material to surge pile.

Flow of materials through the crushed stone plant.



PRODUCT OF

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Attachments Increase Tractor Versatility

DURING THE PAST half century, manufacturers have brought out a variety of useful attachments ranging from front-end pull hooks to ether starting aids in an effort to make the track-type tractor more versatile and to make its operation easier.

The crawler tractor is often subjected to strenuous jobs that may in some way endanger the machine or some part of it.

Guards for Vital Parts

For example, a heavy-duty radiator guard is a wise precaution against tree limbs and brush. If the tractor must operate under severe conditions, an extra-heavy-duty track roller guard will protect the track rollers from damage. Where rocks and stumps are a hazard, a crankcase guard is low-cost insurance against damage to the underpart of the engine and transmission. Other guards are available to protect the engine from low-hanging branches.

Where the tractor is working in extremely dry brush or timber, or near inflammable materials where a spark from the exhaust might prove dangerous, a spark arrester is the answer. For operation near hospitals, schools, or quiet zones, a muffler will keep exhaust noises to a minimum.

Continued operation in wet weather can sometimes spell the difference between profit and loss. A rain trap on the exhaust stack will protect the engine and prolong its life under these conditions. Engine hoods and doors and radiator shutters or curtains will help control

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FOR LARGE & SMALL NEEDS
Save 25% NO SALESMAN TO CALL YOU SAVE IT ALL
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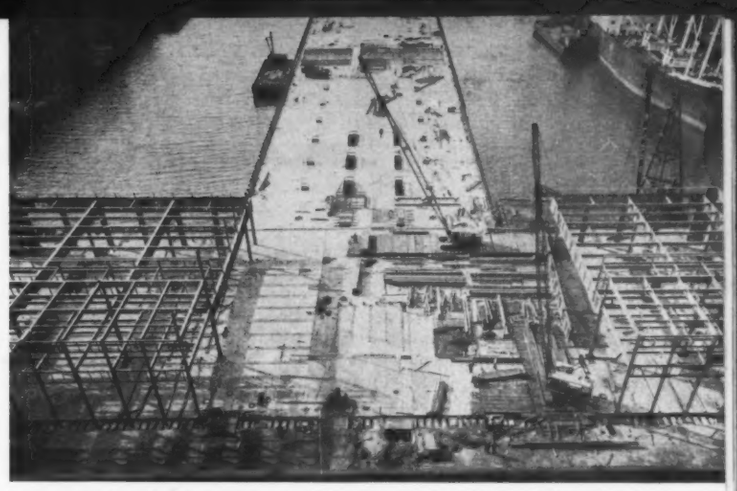
Concrete piers for the new bridge across the Missouri River and an arm of the lake formed by the Garrison Dam near Sanish, N. Dak., stretch toward the ridges in the background. The job is being done by the Massman Construction Co. and the Kansas City Bridge Co., both of Kansas City, Mo. *Caterpillar Photo*



Construction is well under way on pier 57 on New York City's North River. The pier will replace one consumed by fire in 1947. General contractor for the $3,927,000 superstructure is Corbetta Construction Co., Inc., New York City. Built of steel and reinforced concrete, the pier will be completed late this year.

the engine temperature when the mercury nosedives.

For an unusually dusty job, an air-cleaner pipe extension will relieve the air cleaner of some of the load and provide fresher air for the engine. As an extra precaution against lint, chaff, or leaves, a prescreener (standard precleaner combined with a length of wire mesh) is available.

The tractor is required to travel over many types of surfaces. Grousers of various sizes, skeleton shoes, snow and ice shoes, street plates, and rubber shoes are but a few of the many types of shoes available for special jobs. Snow sprocket wheels and different track assemblies insure the tractor's adaptability to unusual climatic conditions.

Push cups, mounted to a U-frame in front of the tractor or attached directly to the dozer blade, further increase the utility of the tractor. A front pull hook is available where heavy-duty equipment must be towed, and it is desirable to hook tractors in tandem. A front bumper can be attached to protect the radiator from heavy bumps or jolts.

Easier Starting

Where a gasoline starting engine is used to start a diesel engine, an electrical starting unit attached to the starting engine can make the job much easier. If it is extremely cold, an ether starting aid can assist the diesel. Winter weather is no problem to the operator when he is enclosed in a tractor cab. To keep him warm, a heater may be installed. A canopy top provides shelter during sudden storms and keeps a hot sun from baking the operator.

Only a Hoe can do Special Excavating Jobs

Hoes are designed for digging below the level on which the machine is standing. However, unlike the dragline and clamshell, that also operate from on top, the Hoe has precision control and a powerful digging action.

A Hoe is free from "wet bottom" difficulties, stands on firm ground and works *away* from the excavation. A properly designed Hoe is a powerful excavator that can dig easily through hard clay, shale or rock. Moreover, because of the fixed length of boom, the dipper can be controlled precisely, resulting in smooth, straight side walls, level bottom and close-limit digging.

Because of these characteristics, the Hoe is ideally suited to certain types of work. Trenching for sewer, water, gas and cross-country pipelines is one of them. These trenches are dug through all types of ground conditions, must have straight side walls and level bottom and frequently are very deep. The precise control of the dipper and the ability to wade through tough digging make a Hoe a "must" on this kind of job.

Hoes are used extensively for excavating residence basements with square corners, level floors—practically eliminating hand trimming. The Hoe can dig the trench for the utility lines, too.

Hoes are available in a variety of sizes and capacities to handle a wide range of jobs and uses ranging from digging basements to pipelines. Illustrated is a "TL" Moto-Hoe in the ¾-yard class.

For excavating for footings for larger structures, big capacity Hoes are available to handle a high volume of dirt and still retain the precision of control necessary for this close-limit work.

Two requisites of good Hoe boom design are a gooseneck boom for maximum digging depth and one with a narrow upper section so the operator can see what he is doing.

The bucket should be so designed that it fills easily, even in tough digging, and dumps easily.

A Hoe can be a money-maker for a contractor. They are available mounted on crawlers or rubber-tire carriers.

Handi-Horse

•

Adjustable — Varied Sizes — Folds Flat

Rubber Feet for Firm Footing

Use for:
Conveyor Stands
Scaffolding
Tables and Benches

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BROADWAY MANUFACTURING CO.
WAUKESHA WISCONSIN

IF IT'S A JOB FOR A *HOE*
LORAIN HAS IT!

There are *some* excavating jobs that *only* a Hoe can handle. There are many others that *can* be dug efficiently with this versatile tool. This powerful, accurate digger can "get you out of a hole" by digging one where no other type of machine can.

Thew-Lorain builds a complete line of Hoe booms for use on all models in the line consisting of seven machine "Series" from ⅜ to 2-yard classes . . . on crawlers, Self-Propelled and Moto-Crane carriers. Lorain Hoe booms range from 14 to 25 feet in length with cutting widths of 24 to 62 inches . . . can dig up to 28 ft. deep. Too, you can interchange your Lorain Hoe with all the other booms available for each model.

If it's a job for a Hoe — big or small — let your Thew-Lorain Distributor prove why it's wise to select a Lorain.

***Here's How* With a Hoe!**

Send for this brand new pictorial book that illustrates jobs best handled by a Hoe. Big pictures of all 7 sizes of Lorains in action. Gives pertinent job data. Illustrates both crawler and rubber-tire models. Every contractor will find this a valuable reference. Write for your copy today.

THE THEW SHOVEL CO., LORAIN, OHIO

Ask your THEW-LORAIN DISTRIBUTOR for facts

Your local Thew-Lorain Distributor can help you in many ways. He will help you determine the right model, mounting and front end from the complete Lorain line. He will show you Lorains in action. He backs up your job with experienced service personnel and parts-in-stock. His facilities can add extra profits to every contract.

SEE THE **LORAIN HOE** IN ACTION!

THEW LORAIN

Portrait in Print

John Yount of Pittsburgh builds

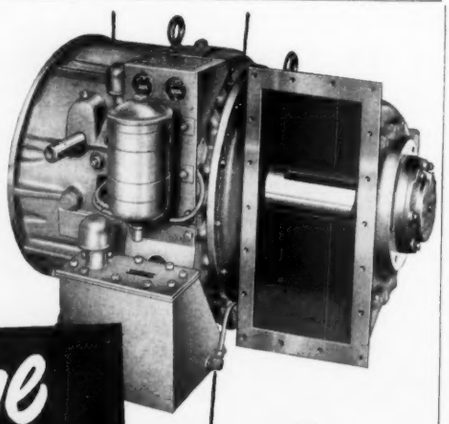
By BILL QUIRK, Editor

MENTION PITTSBURGH, so-called "Workshop of the World", and most people get a quick mental image of iron and steel. But after a talk with John M. Yount, president of the Trumbull Construction Co., Pittsburgh, Pa., these same people will probably come to feel that steel, after all, is not so important when compared to such commodities as asphalt and slag. For John Yount has taken these latter two construction materials and parlayed them into a successful contracting business specializing in bituminous pavements. Whether the paving be for superhighways, airports, parking areas for industrial plants or suburban shopping centers, streets for new real estate developments, or cemetery lanes, the Trumbull Construction Co. takes it all in stride.

The most recent of its many road jobs was the blacktop paving that Trumbull Construction completed late last year on the extension of McKnight Road just north of Pittsburgh. This 3-mile stretch on a new location off U.S. 19 opens up another badly needed approach to the big industrial city. Trumbull subcontracted the base course and paving for the 50-foot-wide highway from the Frank Mashuda Co. of Milwaukee, Wis. Total cost of this state highway-department project was approximately $2,000,000.

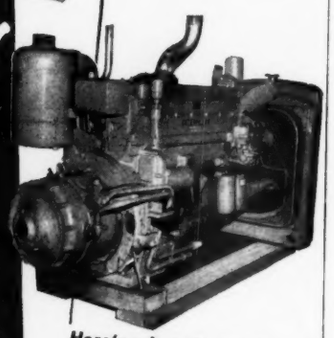
In a little over two months' time, John Yount's forces completed their part of the work and kept the prime contractor looking back over his shoulder to see that the paving operations did not catch up with him. All concerned were well pleased at the paving progress, as well they might be, considering that the 100,000 square yards of pavement laid is 17½ inches thick. This heavy-duty highway paving consists of a 6-inch granulated slag subbase, over which were laid a 6-inch course of water-bound macadam and a 3-inch course of penetration macadam, respectively, followed by 2½ inches of asphaltic-concrete plant-mix. Besides the straightaway work, the job included another 10,000 square yards of paving for approach roads at interchange structures.

John M. Yount, president of the Trumbull Construction Co., Pittsburgh, Pa.



Caterpillar D337 engine (below) equipped with Model CF Torque Converter. Twin Disc Industrial-Type CF Converter (right) available in three sizes, with seven capacities each to handle any type gas or diesel engines from 40 to 1,000 hp.

Torque Converter Drive for your New Power Unit



Here's what the "Twin Disc-equipped complete Torque Converter Power Unit" provides:

- Picks up heavy loads smoothly without slipping the clutch.
- Multiplies engine torque up to 6 times.
- Absorbs shock loads . . . saves clutches, engines, drive line components.
- No mechanical connection . . . drives through fluid action.
- Engine operates in maximum efficiency range at all times.
- Automatically matches power to load demands.
- Permits "hovering" or holding under power.

Next time you talk to your engine dealer about that new power unit, ask him about supplying you with a complete Power Unit equipped with a Twin Disc Torque Converter.

Find out how a small additional investment will return multiplied dollars in greater performance, faster work cycles, lengthened equipment life, easier and more efficient operation . . . with Twin Disc—the Torque Converters that have set the pace throughout industry. Contact your engine dealer . . . today!

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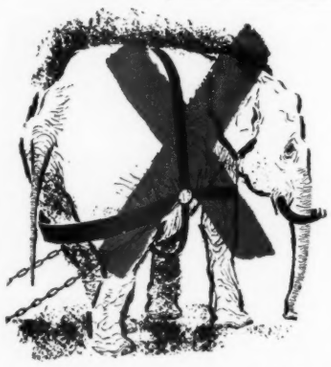
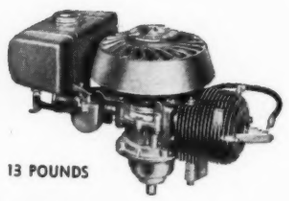


be modern—go Lightweight



13 POUNDS

The POWER PRODUCTS Lightweight packs more power per pound

When it comes to lightweight power nothing can touch this engine. Not only is it amazingly lightweight, but it has every important quality feature to assure long, dependable performance—

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- BALL BEARING MAIN BEARINGS
- SEALED DRIP PROOF CRANKCASE
- FULLY ENCLOSED, FLY-BALL GOVERNOR
- NO OIL CHANGING OR CHECKING
- CLOG FREE COOLING SYSTEM

For portable equipment, you can't find a better engine for lightweight and dependability.

be modern • go Lightweight

POWER PRODUCTS CORPORATION

GRAFTON, WISCONSIN

CONTRACTORS AND ENGINEERS

paving business on asphalt and slag

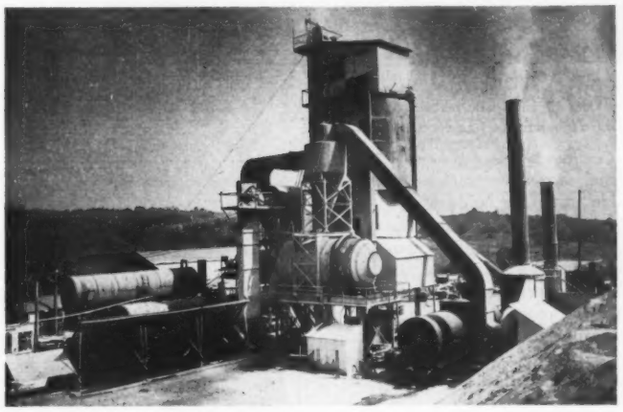
The Trumbull Construction Co. is named after a county in eastern Ohio. John Yount had spent the early part of his adult life at Warren, the county seat. His family had moved around a bit before coming to Ohio, living at times in New Jersey, where John was born in 1903, in Michigan, and in Texas. During summer vacations from Ohio Northern University, John worked for his uncle, William M. Yount, whom he credits with having a great influence on his later career in the construction industry. After being graduated in 1927 with a civil engineering degree, Yount decided to put his training and experience to work for himself and embarked on a contracting career. He began in a modest way by paving driveways with bituminous material purchased from commercial suppliers. From such a humble start, John Yount expanded gradually, taking on small road jobs for counties, townships, and municipalities, and later, some sizable state work. In 1933, he shifted operations to what proved to be the more fertile area of Pittsburgh where many industrial plants needed paving work done. Lately, Pittsburgh's suburban sections have been springing up like mushrooms, with sprawling shopping centers and housing developments requiring new pavements for parking lots, streets, and roads.

Trumbull Construction Co. is getting its share of this private commercial and industrial work and is now one of the three biggest paving contracting organizations in the Pittsburgh sector. It still limits itself to flexible-type pavements only and, except for a few jobs in neighboring Ohio and West Virginia, mainly confines its operations within a 50-mile radius of Pittsburgh's Golden Triangle.

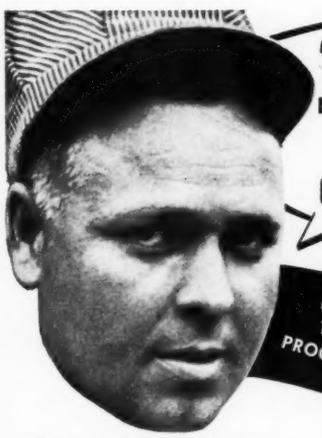
Two Brothers

John Yount, the president, is 50 years of age, 6 feet tall, weighs 195 pounds, and has brown hair and blue eyes. This husky bundle of energy is the "outside" man for the company and personally directs all the construction activity. His brother,

(Continued on next page)



Above is the Yount brothers' barge-mounted asphalt plant, which works along the Allegheny, Monongahela, and Ohio rivers. Below is Trumbull Construction Co.'s permanent asphalt plant near Pittsburgh. It is equipped with a 12-foot-diameter double-drum Simplicity dryer.



"WE SAVE TIME... Labor and Maintenance Costs with our HI-LECTRIC® CONCRETE VIBRATORS!"

says: James Farwell, Eqpt. Sup't.
Swan Construction Company
Newport, Kentucky

READ THIS PROOF...

I used HI-LECTRIC Concrete Vibrators on 8" soaking pit walls, 40' wide by 200' long. They were so heavily reinforced with steel, including 2" x 2" x 33' long billet bars, that past experience with other type vibrators convinced us HI-LECTRIC was the only unit capable of handling the job efficiently and economically.

They did the job at considerable savings of time, maintenance, and labor cost, convincing me that HI-LECTRIC Vibrators will be my choice in placing concrete from now on.

James Farwell

Place concrete faster — get a better looking job — more economically

HI-LECTRIC "MAGIC HEAD" CONCRETE VIBRATOR

THE COMPLETE ASSEMBLY

NOW one man can actually place concrete faster and better with a HI-LECTRIC than two or three men on other types of vibrators. Only the HI-LECTRIC has the "Magic Head", far lighter, far more efficient without flexible shafts or in-the-way power units. The power source may be as far as 200 feet from the vibrator and still permit one man to vibrate 1½" slump and up to 3" aggregate more quickly. *Write for new catalogue.*

Maginniss
POWER TOOL CO.
Mansfield, Ohio

Controlled Shots from Prehy Placer.

F. H. McGraw Saves Time and Money with the C_B Method* of Column Construction

By using the C_B method of column construction, F. H. McGraw & Co. was able to build this column in thirty minutes. It surpassed all other methods of column placement for efficiency plus savings in money and time.

The C_B method of concrete placement requires no runways and eliminates vibrating and patching.

Consider the C_B Method with Prehy Equipment on your next job.

* U. S. Pat. applied for.

C. L. Ballard
420 Lexington Avenue
New York 17, New York

A family man, John Yount relaxes at home in Pleasant Hills, with his wife, Emma, left, and daughters, Emmalee and Anita.

(Continued from preceding page)

Fred, two years younger, is the "inside" man. He holds down the posts of vice president and treasurer and looks after sales and accounting. He is a graduate in business administration from Ohio's Antioch College. The Trumbull Construction Co. was incorporated in 1946, but the Younts' experience as specialists in bituminous construction stretches back for a full 30 years.

Since 1934, headquarters for the Yount contracting operations has been in a pleasant two-story office building on a tract of land adjoining the Allegheny County Airport, about 8 miles southeast of Pittsburgh. Close by is the big asphalt plant that each year turns out sizable tonnages of specially designed mixes in addition to large quantities of standard specification material. What John Yount does not use himself, he sells to other contractors who lay driveways or have small paving jobs. About a quarter of a mile from the Trumbull asphalt setup is a slag-processing plant of the Duquesne Slag Products Co. Slag is delivered directly to the asphalt plant in railroad cars over a Duquesne Slag Co. siding. Yount uses slag exclusively for aggregate in his plant-mix work. Only occasionally, to meet a certain specification, is he required to add a little river sand to obtain a desired blend of mix.

Big Asphalt Plant

For the most part, the Younts designed and built their asphalt plant themselves. It towers 75 feet in the air as high as the 300-ton aggregate storage bins. As the slag comes in on the 8-car siding, the material is discharged from bottom-dump cars into a hopper below track level. From there it is moved along by a Syntron feeder and a Barber-Greene conveyor system to three 50-ton bins located below the level of the ground. Covers on the bins open so that they may be filled also by trucks from the opposite side.

From the bins, the aggregate is conveyed to an enclosed cold elevator that feeds the dryer—an S120 double-drum Simplicity unit—12 feet in diameter and fired by three Hopkins burners. Through an enclosed hot elevator, the slag is lifted to four 75-ton storage bins high in the plant. A Brown electric pyrometer indicates the temperature of the material in each bin. Butterfly gates feed the slag to either a 3-ton or a 1-ton pugmill at a lower level in the plant. Together, these mixers give the plant a total output of 150 tons per hour.

With the various dump trucks hauling plant-mix, traffic sometimes gets so heavy that Yount has rigged up a signal system with red and green lights to maintain order at the plant. Only when the lights flash green do trucks hauling to his own jobs drive under the tower for a load. Red lights signal trucks hauling purchased material to fill up. Signals are given by the pugmill operator so that there is no chance of a slip-up in the type of mix going into the different trucks. For quick action in case the pugmill operator's orders are changed, the dispatcher at the scales presses a button which lights a red light near the operator. This is his signal to halt all operations until new instructions are issued. The storage facilities for the bitumen, which also comes by rail in tank cars from either the Ashland Refining Co. at Ashland, Ky., or the American Bitumuls & Asphalt Co., Baltimore, Md., are spacious. A total of 16 tanks holding 282,000 gallons of bitumen keep the big asphalt plant supplied.

Other paving equipment on the Trumbull Construction Co. roster includes four Barber-Greene finishers, four Littleford distributors mounted on Brockway trucks, a dozen rollers of assorted makes and sizes, a Vibro-Tamper, and a fleet of spreader boxes. Trucks are hired as needed, generally on a ton-mile haul basis. During the peak of con-

PETTIBONE SPEEDALL

FRONT END LOADER WITH TORQUE CONVERTER

1 and 1½ CU. YD.

The brightest performance star of all front end loaders. Torque converter delivers more power, easier and faster, saves fuel, eliminates clutch replacements. Bucket, fork, crane hook, snow bucket and plow attachments.

PETTIBONE SPEED GRADER

Eliminates the Weaknesses of All Other Graders!

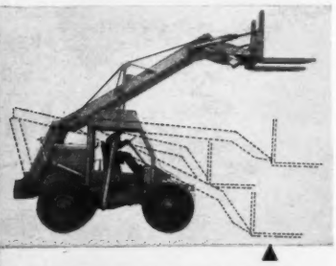
New records for power and low maintenance costs are the natural result of Speed Grader's exclusive features: Strongest frame, heaviest tandems, greatest circle power, most trouble-free hydraulic system. 5 sizes, 65 to 107.8 h.p.

PETTIBONE SPEED SWING

180° Swing Loader with Torque Converter

There's nothing like it! Loads front, left, or right without gee-hawing. The only loader for tight spots. ¾ and 1 cu. yd. buckets, fork, crane hook and snow bucket attachments interchangeable. A sister machine is the Speed Swing Yard Crane.

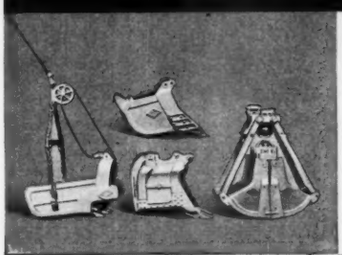
A few of the over 70 basic products PETTIBONE *manufactures for the construction industry alone!*



PETTIBONE CARY-LIFT

The Loader with the R-E-A-C-H

Another Pettibone exclusive! Ideal for soft terrain, it does the work of a fork lift, front end loader, grapple, crane, a clamshell, or bucket loader. It picks up, carries, lifts, and reaches 4′ at all heights.



PETTIBONE SPEEDLOADER

All-Purpose Loader

Cross Breed Feed (illustrated) loads earth and aggregates, 5 to 8 cu. yds./min; snow, 10 to 20 cu. yds./min.

Bucket Feed loads from stockpiles and windrows, also digs, levels, mixes.

Dragger Back Feed swallows windrows faster than any loader made.

PETTIBONE BUCKETS

PETTIBONE HAISS

Pettibone and Pettibone-Haiss clamshell buckets, dragline buckets, dipper buckets, and pullshovel dippers are recognized the world over for cutting strength and stamina. Over 65 styles and sizes.

PETTIBONE HAISS LOADERS

Self-Propelled, Self-Feeding

Long a standard for high capacity loading of crushed stone, gravel, sand, top soil, coal and snow. 22 models, with or without swivel belt conveyor, are available for every imaginable continuous loading job.

struction, about 100 people are on Trumbull's payroll.

A few years ago, the Yount brothers decided to take advantage of the low-cost water transportation resulting from Pittsburgh's location at the Golden Triangle where the Allegheny and Monongahela rivers join to form the Ohio River. Taking two 20 x 100-foot barges with their long sides fastened to each other about 9 feet apart, the brothers built a complete asphalt plant up from their decks. They work this plant up and down the three rivers, getting the materials of construction—asphalt and aggregates—direct from river barges. In this way, they cut costs considerably, since barges provide the cheapest means of transporting bulk supplies.

The mobile floating plant is towed to a point on the river which is as close as possible to the project. This eliminates the lengthy, costly, nonproductive time ordinarily consumed in setting up and dismantling a portable land-based asphalt plant. The haul from the floating asphalt plant to the job site is usually less than the haul from the central permanent plant, even if the latter were within economic range.

A few tricky technical problems had to be overcome before the floating plant could go to work. To get vertical clearance under some of the river bridges, the tall hot elevator was built with telescoping sections so that it could be lowered. An ingenious ramp, 30 feet long, carrying dump trucks between shore and barge, was also constructed. The ramp was designed with a double swivel connecting joint and built with pipe casing that telescoped both horizontally and vertically, thus compensating for the rise and fall of the river.

The plant is capable of turning out material at a rate of 100 tons per hour. It has ranged as far from Pittsburgh as East Brady, Pa., 70 miles up the Allegheny, to supply plant-mix for a paving project. Diesel-driven generators aboard the floating plant furnish the operating power. A derrick boat with an 80-foot boom goes along with the unit to unload the aggregate and charge the plant hopper bins as barges tie up alongside the plant.

John Yount is a man with great enthusiasm for his work. He gets wrapped up in every job he does, whether it is big or small. The job in which he takes the most pride is usually one of his latest accomplishments. Right now it is the McKnight Road extension out of Pittsburgh which has nary a ripple in its 50-foot-wide smooth-riding surface. This job initiated the use of flexible macadam and plant-mix on a granulated slag subbase. Yount has long been an advocate of granulated slag, a by-product of the steel mills, for use in subbases.

"When used in conjunction with coarse aggregate," he explained, "granulated slag provides better bases than anything else your money can buy. Our company has used this material for the past 30 years, and we've found that, although it's comparatively slower than concrete in cementing together, it does set up similarly to concrete. Due to the nature of the material and the large number of air spaces within the granulated-slag slab, it has an elastic-like toughness not found in other materials. It has the ability to withstand the shock of contraction and expansion without fracture. Regardless of depth, width, and length of its installation, it doesn't require the use of expansion joints. Granulated slag is relatively inexpensive and, when used with crushed aggregates and bituminous materials, results in excellent heavy-duty slab-type pavements, free from leaky and bumpy joints, and surprisingly low in cost."

Family Man

With his wife, Emma, an attractive brunette, and their two daughters—Anita, 11, and Emmalee, 10—Yount lives in a big house in Pleasant Hills, a Pittsburgh suburb. Although the house has a tennis court at the rear—bituminous surfaced, of course—Yount seldom plays. Instead, he has converted it into a basketball court where the neighborhood youngsters work out. His family, his work, and a pair of blue-ribbon collies are the contractor's prime interests. For relaxation in the evening, he usually drums up a few hands of bridge with his wife and daughters. The precocious little charmers have been playing cards since they were about six years old, and offer keen competition.

From early spring until late fall, Yount drives himself at top speed on his various paving jobs. Once a chain smoker, consuming four packs of cigarettes a day, he resolutely gave them up when he found they were affecting his work and health. The tempo of his activity reaches a peak just before the cold weather sets in, as he rushes each job to completion. Key employees are retained through the winter months, doing sundry maintenance jobs at the plants, so that they will be available in the spring.

Wintertime, with snow and ice closed in on the hill country of western Pennsylvania, finds the Yount family vacationing on the east coast of Florida. But even there the contractor's restless energy has set him off on a new undertaking—building ocean-front and bay-front homes in a development known as Ocean Crest Estates. This planned community, featuring dwellings in the moderate-priced bracket, is located along Florida's famed Gold Coast between Palm Beach and Delray Beach. It's just a project to keep John Yount busy until that asphalt plant in Pittsburgh gets up steam again in the spring. THE END

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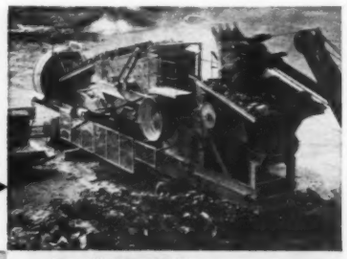

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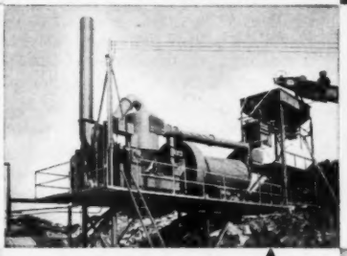

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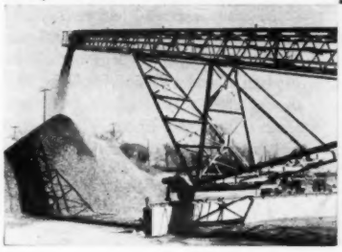

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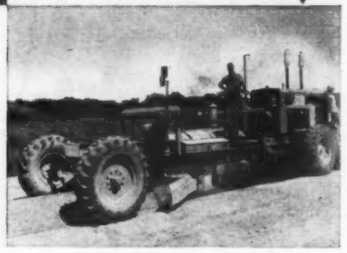

Illustrated here are but 12 of over 70 basic products for the construction industry Pettibone and its subsidiaries manufacture and sell. Counting various models and sizes, over 300 items comprise the extensive, versatile Pettibone construction equipment line, *exclusive of parts*. Pettibone and its subsidiaries enjoy 396 years of combined engineering and manufacturing experience in heavy goods. You can justifiably put your confidence in Pettibone equipment!

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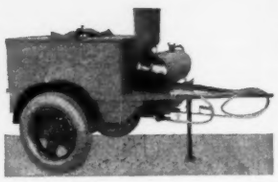

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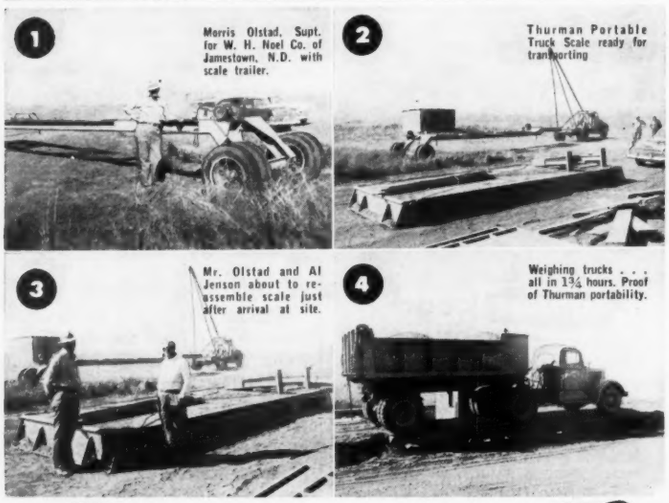
Buford Dam To Have Va

BUFORD DAM, a multiple water-resource project on the Chattahoochee River in northern Georgia, is the second of four structures (Jim Woodruff, Columbia, Fort Gaines) authorized by Congress for construction in the basin. The first dam started was Jim Woodruff in Florida. (See C. & E., Oct., 1948, pg. 63 and Oct., 1950, pg. 20.) Buford, being built by the Mobile District, Corps of Engineers, U. S. Army, is 35 miles northeast of Atlanta and 348.5 miles above the point where the Chattahoochee River joins the Flint River to form the Apalachicola River. The principal features of the project are a 1,630-foot-long earth-fill dam which will rise 192 feet above the river bed, and a power-house located in a deep cut on the right bank. Early estimates placed the total cost at approximately $41,-000,000. Work got under way in March, 1950, but the project has suffered from lack of funds so that the date of completion is still some years away.

The principal purposes of the Buford project are: provision of an increased flow for navigation in the Apalachicola River during low-flow seasons, flood protection for the valley below the dam, production of hydroelectric power, and assurance of an adequate water supply for municipal and industrial uses in metropolitan Atlanta. The lake to be created by the dam will also offer opportunities for fishing, hunting, boating, camping and other recreational development.

The main dam and saddle dikes will contain approximately 5,100,000 cubic yards of earth. There will be a 100-foot unpaved chute spillway with its crest at elevation 1.085; one saddle dike 2,000 feet long on the left bank; and two saddle dikes each about 2,300 feet long on the right bank. The top of dam and dikes will be 1,106 elevation. When fin-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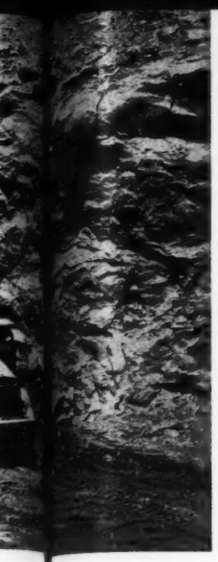

Excavating in the forebay area, a Bucyrus-Erie 54-B shovel loads a Euclid as a Caterpillar D8 dozes around the shovel.
C. & E. Photos

ve Varied Objectives

ished, the generator capacity will be 86,000 kw. The reservoir will have a water reserve of approximately 365,000,000,000 gallons to supplement natural inflow during the low-flow seasons. At the top of flood control pool (elevation 1,085) the lake will cover 46,000 acres and have a shoreline about 670 miles long.

Getting Started

H. N. Rodgers & Sons Co., of Memphis, Tenn., had the initial $280,000 contract which was completed in April, 1951. This work included clearing and excavating for the spillway, and the construction of saddle dike No. 3 on the left bank.

Work on the second contract got under way in June, 1951, after the Corps of Engineers awarded a $2,822,788 contract to Groves, Lundin & Cox, Inc., of Minneapolis, Minn. Known as the diversion works contract, this phase of the project included excavation of forebay, tunnels, and tailrace and construction of saddle dikes No. 1 and No. 2 and an access road. It is 4,000 feet from the diversion works to the center of dike 1, and 2,000 feet to the center of dike 2.

The forebay includes the area to be occupied by the intake structure, adjacent retaining walls, and the forebay proper. The tailrace includes the area to be occupied by the powerhouse, transformer yard, access road turn around, and the tailrace proper. The forebay, varying from 50 to 200 feet in width, extends about 800 feet in length from the river, while the tailrace reaches back 1,100 feet to the river again. The diversion works is located on the right bank of the river.

Connecting the forebay and tailrace are four tunnels—two power tunnels approximately 22 feet in diameter and 250 feet long, one

(Continued on next page)

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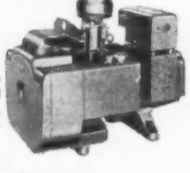

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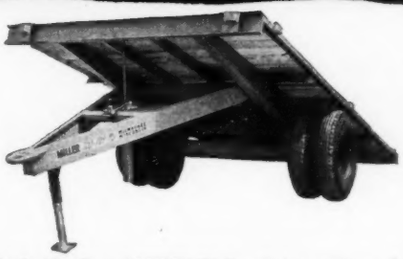

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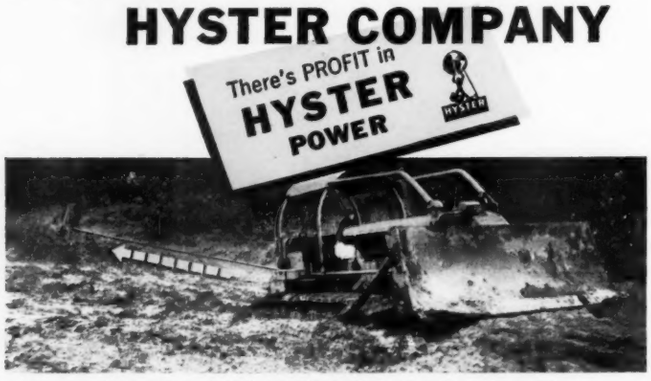

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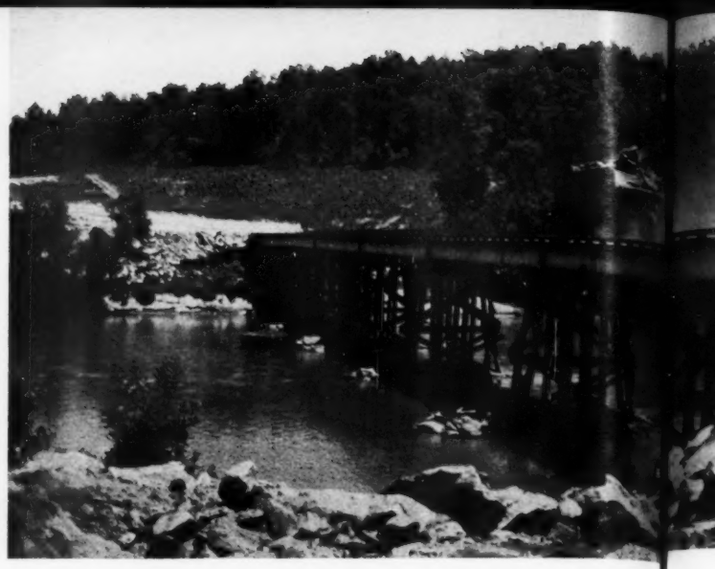

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power tunnel approximately 10 feet in diameter and 120 feet long which branches off one of the large tunnels, and one flood-control sluice tunnel approximately 13 feet in diameter and 250 feet long. A 6 x 9-foot shaft, also through rock, will afford access between the powerhouse and the intake structure. When the dam is completed, the smaller branch power tunnel will be used primarily to insure the flow of the minimum required amount of water downstream. While the flood-control sluice tunnel will be used during the construction of the dam proper, it will probably be seldom used after the powerhouse is in operation.

Natural Site

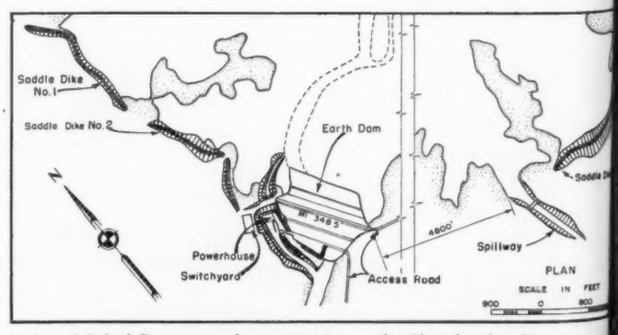
The dam is located at an excellent natural site where surrounding hills pinch the river into a bottleneck. Above the site, the river plain flattens out to a wide valley. The town of Buford is about 5 miles southeast of the project, and U. S. Highway 23 and the tracks of the Southern Railway are also located approximately the same distance from the dam. Since there is no river crossing at this point, one of the items in the Groves, Lundin & Cox contract was to build a construction bridge. The Corps of Engineers provided steel beams from a work bridge used when Allatoona Dam, Cartersville, was built (see C. & E., Oct., 1947, pg. 2). This structure was dismantled, moved to Buford, and rebuilt to form a 427-foot construction bridge consisting of seven 61-foot spans. Six river piers of rock-filled timber cribbing and two abutments support the steel stringers.

Also included in this contract was the building of two earth cofferdams—one at the entrance to the forebay area and the other at the exit of the tailrace. They were constructed to a maximum height of about 25 feet to protect the excavation in the forebay and tailrace areas from high river stages.

After the clearing, grubbing, and stripping was completed in the various construction areas, the contractor got down to the major work: excavating dirt and rock and moving the material. Unclassified excavation totaled 771,119 cubic yards, while rock excavation amounted to 900,512 yards. Excavation for the tunnels only came to 13,617 yards.

Suitable material from the unclassified excavation was used in

A Joy wagon drill works in the tailrace area prior to excavation. Holes are charged with 1½ x 8 Gelamite fired with DuPont delays electric blasting caps.



A plan of Buford Dam now under construction on the Chattahoochee River in northern Georgia by the Mobile District, U. S. Army Corps of Engineers.

This Euclid moves across the work bridge spanning the Chattahoochee River, carrying a load of unclassified material to be stockpiled for future use in the dam.

constructing saddle dikes 1 and 2, the two cofferdams, and part of the access road, while the rest was stockpiled for future use in the dam itself. Some of the rock excavation went into the building of the saddle dikes, and some was used for dumped riprap on the river side of the cofferdams. About 75 per cent of the rock was stockpiled to provide a rock zone on the upstream face of the new dam in lieu of riprap. Rock at the dam site is mostly granite and gneiss, topped by an average 20 to 30-foot overburden of clay, silt, gravel, and sand.

Excavating, hauling, spreading, and compacting equipment included 2 Bucyrus-Erie 54-B 2½-yard shovels, a Link-Belt Speeder ¾-yard dragline, 12 rear-dump and 8 bottom-dump Euclids, 7 Caterpillar D8 tractor-dozers, 2 Caterpillar motor graders, 3 tractor-scraper units, and two pairs of Gebhard tamping rollers hooked in tandem.

Rock drilling was done with 12 Chicago Pneumatic, Cleveland, Gardner-Denver, and Joy wagon drills, and four assorted jackhammers. Air was supplied by seven Chicago Pneumatic, Gardner-Denver, and Le Roi compressors. A battery of six compressors, producing 3,200 cfm, was set up in a row under a lean-to. Through a single governor, they pumped air into a common receiving tank. From this station, the air was carried in a 6-inch pipeline that encircled the entire area being excavated. Various other 4-inch lines of Alcoa aluminum tapped off this feeder pipe on the berm, and dropped down into the hole to connect to the drilling equipment. The lightweight 4-inch aluminum pipe came in 20-foot lengths which

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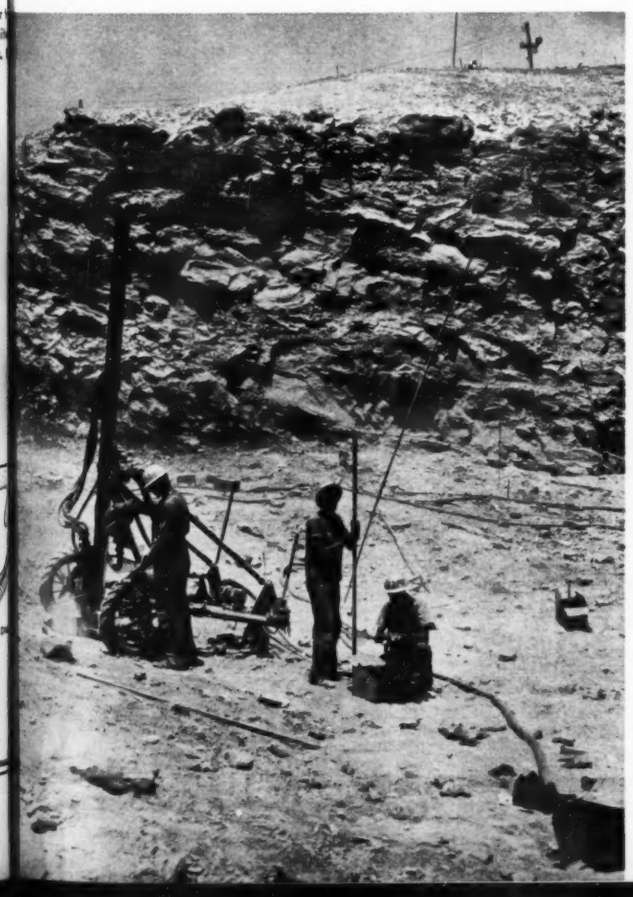

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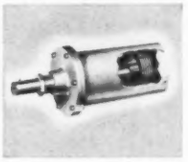
Why not see your nearby Marion Distributor for more in-the-field proof . . . or write direct . . . today.

HERE'S WHY MARION HOISTS . . . LAST LONGER . . . GIVE BETTER PERFORMANCE . . . ARE MORE DEPENDABLE AND ECONOMICAL TO OPERATE.

The secret is in the double equalizing lift arms. By carefully designing the curved lift arm tract to the circular path of the rollers, Marion engineers have succeeded in accomplishing outstanding performance. The hoist starts at extremely low oil pressures and continues to lift smoothly without fluctuation or pressure surges even when the loads are retained in the body such as in spreading.

Marion pumps are built to last. Meehanite housing is used with case-hardened gears and shafts. Four anti-friction needle bearings assure smooth performance. Patented valve gives positive control for spreading . . . check eliminates back pressure. Valve action is progressive—raise, hold and lower.



Cylinders are made of seamless steel tubing bored and finished to a glass-like smoothness. There is a bolted leak-proof head. Piston has four iron Graflox-treated quick break-in rings — one ring per groove.

Hoist sub-frame is designed to give increased strength with a minimum of weight. Rear of the frame is enclosed. The point of support at base of cylinder is designed to withstand excessive horizontal and vertical stress.

"Designed on the Job"

MARION BODIES AND HOISTS

MARION METAL PRODUCTS CO., MARION, OHIO, U. S. A.

A complete line of standard and special hydraulic hoists & dump bodies to fit every need

(Continued from preceding page)
were connected by Wade Rain aluminum couplings with rubber seals. The line was designed and built to withstand pressures of 750 psi, although for this particular job the working air pressure was only 100 psi.

Drilling and Blasting

The wagon drills were equipped with 1¼-inch-round drill steel carrying carbide Rok-Bits starting at 2½-inch. The usual practice was to start with a 9-foot length of drill steel, and when that had reached its effective limit, to switch to a 17-foot length. Holes were drilled to 16 feet, which depth accounted for an average 14-foot lift. From 40 to 50 feet of drilling was done before a bit was removed for resharpening. Bits were resharpened on the job. Reground five or six times before being discarded, they averaged a total of 250 feet of drilling.

Holes were charged with Hercules 1½ x 8 Gelamite and fired with DuPont delays electric blasting caps. Holes were spotted in a staggered pattern on 6-foot centers both ways. The average 16-foot hole was loaded with from 8 to 10 feet of dynamite. From ¾ to ⅞ pound of powder was required per yard of excavated rock. Areas up to 40 x 150 feet were shot at a time, usually either at noon or from 5:30 to 6 p. m. Blasting was done from a 220-volt line, a double switch being employed for safety. The Georgia Power Co. installed a substation at the site to supply power for the job needs. A feeder was tapped off a main transmission line only a few miles east of the project.

In the forebay area, the depth of the rock excavation was about 100 feet, while in the tailrace, the maximum rock cut was nearly 150 feet. The sides of these rock cuts are on a 1 on 6 slope and required 71,280 square feet of line drilling. A pair of Joy quarry bars did the line drilling, getting a 20-foot depth from one setup. Holes were spaced on 5-inch centers, and 2½-inch bits were used. When completed, the forebay excavation was down to elevation 919, while the tailrace was 900.

Drillers on the blast holes worked two shifts at the beginning of the job to get a start on the excavation. Five electric generating plants—3 Kohlers and 2 Caterpillars—supplied light for the night shift.

Compacted Fill

Excavation work started in the forebay area, with the material going into the construction of the saddle dikes and the downstream or tailrace cofferdam. Soon excavation started in other areas, and the upstream, or forebay, cofferdam was also built. The item for compacted earthfill in this contract totaled 342,603 yards. Fills were built up in 8 to 10-inch layers and compacted with both hauling and spreading equipment as well as modified sheepsfoot rollers. Welded to each tamping foot was a 3 x 4-inch steel plate which increased its area to 12 square inches. The plates were so located that the long sides were in line with the direction in which the roller moved. This modified roller was preferred over the standard rollers by the contractor. The amount of rock in the soil wore down the size of the feet on standard rollers below the specification area and caused higher maintenance costs. Saddle dikes 1 and 2, on the right bank, are about 2,300 feet long, 35 to 45 feet high above natural ground, have 25-foot-wide crowns, and 2½ to 1 side slopes. The rock fill on the upstream face is about 30 feet thick at the bottom and 10 feet thick at the top.

The average haul distance from the central excavation area at the extreme right of the dam to the two saddle dikes was ½ mile. The maximum haul was 1 mile. The Chattahoochee, "Treacherous Waters" in the language of the Indians, will eventually be diverted through the forebay, tunnels, and tailrace on the right bank. Thus it was necessary to haul the bulk of the rock excavation, about 700,000 yards, across the river to stockpile areas on the left bank via the construction bridge. This haul averaged 1,200

HOLLOWS COST MONEY!

If you hold to within 5% of grade (that's less than ½ inch on a 9 inch thickness of material) you are putting almost 176 cu. yds. of extra material in every mile of road. You estimate what those 176 yds. cost you in your area . . . Hollows cost money!

The Adnun equipped with the Fluid Level will materially reduce waste in spreading stone and other base course materials and in laying asphalt base and surface.

With the Adnun Fluid Level you supplement the amazing accuracy of Adnun Continuous Course Correction with a gauge control so positive that you can take out the dips that won't show under the straight edge. Continuous Course Correction removes the short hollows and combines with the Fluid Level to give you results ordinarily associated with long wheelbase.

With the Adnun Fluid Level you have full control from subgrade to finished surface. With each course laid by the Adnun to an absolute plane and to accurate thickness *all the way* across the road and for every mile, better density and longer road life with less waste of materials is a sure result. With the Fluid Level you should beat that 5%.

Don't throw away material! Figure closer with the Adnun and the Fluid Level. If you haven't seen the booklet, "Put a Level on your Roads," ask for it.

* The Fluid Tells you it's Level. A turn of the hand adjustment wheel holds a positive grade. Every mile of road can be uniform as to thickness and density.

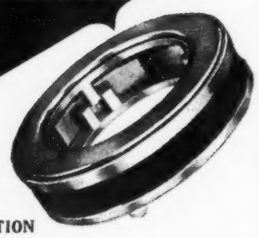
If you haven't seen the little booklet, "Put A Level On Your Roads," ask for it. It has some new thinking on road building.

BLAW-KNOX COMPANY
FOOTE CONSTRUCTION EQUIPMENT DIVISION
1916 State Street,
NUNDA, NEW YORK

BLAW-KNOX

ADNUN
TRADE MARK REGISTERED
BLACK TOP PAVER

REPLACEMENT PARTS for "CAT" TRACTORS at a SAVINGS!



GIVES DOUBLE PROTECTION

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27-45 Jackson Ave.
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CALL OR WRITE

BOBKER BEARINGS

feet. This rock will eventually be placed on the upstream face of the new earth dam.

While these operations were in progress, a 6,400-foot access road was being built. It extends from the vicinity of the spillway and saddle dike No. 3 on the left bank of the future reservoir to the left abutment of the dam. It has a 20-foot bituminous surface-treated pavement flanked by 6-foot shoulders. A road will eventually cross the downstream face of the dam to provide access to the powerhouse.

Diversion Work Completed

The diversion works contract, including the drilling and excavating of the tunnels, was completed last May. At the peak of the construction, Groves, Lundin & Cox, Inc., employed a force of 120 on the contract, under the direction of Earl B. Daves, superintendent.

The next contract for Buford Dam covered the construction of concrete linings for the three power tunnels, the single sluice tunnel, and the transition sections in the penstocks and sluice. The necessary concrete totaled 4,670 cubic yards. Also included in this contract was an item for the fabrication and installation of steel penstock liners and sluice pier nosing from material furnished partly by the Government and partly by the contractor. Along with this work was an item covering the drilling of grout holes and the required pressure grouting. In March, 1953, the Corps of Engineers, Mobile District, U. S. Army, awarded a contract for this work to L. A. Tvedt of Memphis, Tenn., on a low bid of $517,486. The contract is scheduled for completion by this month.

The Mobile District awarded a contract in October, 1953, to the J. A. Jones Construction Co. of Charlotte, N. C., on a low bid of $2,019,598 for the construction of the intake structure and sluice outlet works. Concrete masonry for the intake structure, training and retaining walls, sluice stilling basin, sluice block, and access tunnel totals 69,000 cubic yards. The contract includes all electrical and mechanical work and the installation of Government-furnished equipment for the operation of the structure. This part of the project is scheduled for completion by the middle of 1955.

When this last contract is completed, the river can be diverted through the intake structure by throwing an earth dike across the Chattahoochee, upstream of the dam site. Then the earth dam itself can be built, along with the powerhouse. Dirt for the big embankment—1,630 feet long, 192 feet high, and 1,300 feet wide at the base—will total close to 4,000,000 cubic yards. Material will come mostly from upstream borrow areas along the left bank of the river.

Personnel

The Mobile District, Corps of Engineers, U. S. Army, which is directing the Buford Dam project, is headed by Colonel Harry L. Fox, district engineer, while Dupree Hays is chief of the Mobile District Construction Division. Charles A. Jackson, Jr., is resident engineer at the job site. THE END

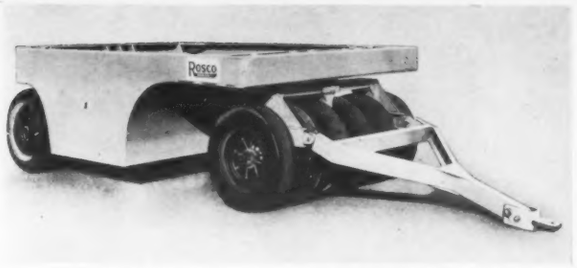
Motor-Generator Set

■ A new motor-generator set for supplying 400-cycle current has been developed recently by the Katolight Corp., 624 N. Front St., Mankato, Minn. The unit is a 30-kva, three-phase, 120/208-volt generator with a direct-attached 125-volt dc exciter.

A high-frequency rotor is mounted on the same shaft as the 50-hp three-phase motor rotor. The alternator is of revolving-field design. The motor has a full load speed of 1,714 rpm.

When used with a voltage regulator, the output voltage is held within plus or minus 2 per cent between no load and full load. The inherent regulation is about 35 per cent.

For further information write to the company, or use the Request Card at page 18. Circle No. 698.



Compaction Rollers

■ A line of multiple-wheel pneumatic-tired rollers is announced by the Rosco Mfg. Co., 3118 Snelling Ave., Minneapolis 6, Minn. The Rosco-Pactor compaction rollers are being built in 9 and 13-wheel types. With smooth-tread 7:50 x 15 tires, the rollers have positive lap between front and rear tread.

The 13-wheel model weighs 3,700 pounds and provides a compaction path of 84 inches. The 9-wheel model weighs 2,820 pounds and the compaction path is 60 inches. Both have a 106-inch wheelbase with a loaded height of 44 inches and are built to a box length of 10 feet.

For further information write to the company, or use the Request Card at page 18. Circle No. 744.

Clues to a better road

■ For a better road . . . a smooth, glare-free, safe road . . . asphalt construction offers important advantages to road builders.

High building speed. Easier laying of asphalt, use of lighter and faster equipment, rapid setting of asphalt paving . . . all help speed road construction.

Wide economy. Faster jobs mean fewer man-hours and lower labor costs. Because local aggregate can be used, material costs are lower. Maintenance of asphalt roads takes a minimum of time, labor, and materials.

Durable construction. Asphalt and heavy aggregate, mixed, make strong road foundations. Top courses of asphalt, stone, and sand present long-wearing, waterproof surfaces.

You add further to those road building advantages by using Standard Oil asphalt. With five asphalt-producing refineries located throughout the Midwest, Standard Oil makes the haul to your job a short one. Prompt, reliable shipments eliminate work delays. Freight costs are at a minimum. Standard Oil Asphalt Representatives are situated throughout the Midwest to give you "on-the-spot" service. Phone your local Standard Oil office. Or, write: Standard Oil Co., 910 So. Michigan Ave., Chicago 80, Ill.

STANDARD OIL
ASPHALT

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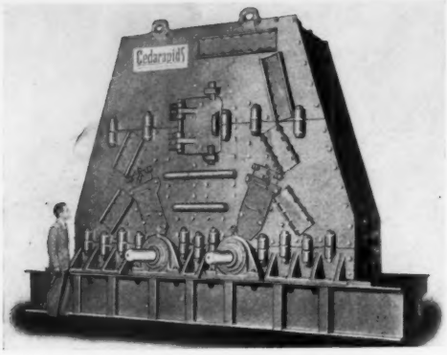
STANDARD (Indiana)



Large Impact Breaker Has Double Impeller

■ Another addition to the Cedarapids line of double-impeller impact breakers has been announced by Iowa Mfg. Co., 916 N. 16th St., Cedar Rapids, Iowa. The new Model 5360H is a larger heavy-duty machine incorporating most of the features found in the five smaller sizes previously announced.

The capacity of the Model 5360H ranges from 500 to 800 tons per hour of 4-inch-minus product, depending upon the type and characteristics of the material processed. This big impact breaker can be fed with material measuring as much as 53 x 60 inches in size, with reduction to a minimum size of 3-inch-minus in one pass.

Reduction of material to the desired size is accomplished in several ways. Incoming aggregates drop to the two impellers which rotate in opposite directions. These rotors, revolving upward in the center, strike the primary rock and shoot it upward through the large breaking chamber above the impellers and against the round breaker bars. As the broken rock particles fall, they are met in mid-air by incoming feed and other particles shot up by the impellers. This high-speed impact of stone against stone results in a high percentage of material being broken in suspension. The manufacturer points out that with approximately 50 per cent less contact of stone on metal, there is a reduction in wearing action on the manganese steel parts of the breaker.

A high ratio of reduction, said to be as much as 40 or 50 to 1 in some applications, eliminates the need for much auxiliary equipment such as screens and conveyors.

For further information write to the company, or use the Request Card at page 18. Circle No. 793.

Truck Self-Loader Has Varied Attachments

■ A booklet on a hydraulic truck self-loader is available from LoDal, Inc., Norway, Mich. Mounted on the front of a dump truck, the LoDal loader handles sand, gravel, crushed rock, and other heavy material. It scoops up the material and loads it into the truck with a ¾-yard bucket at a rate of 2 yards per minute working on stockpile gravel. One man does the entire job.

The booklet also describes a pickup sweeper which, installed in the standard LoDal, sweeps up debris and loads it directly into the dump truck. A combination of special side boards and a refuse lip is offered for trash and refuse collection. The equipment features a low lift height for the workman. In addition, the company offers a bucket extension for snow loading and a special side board assembly for dump trucks that increases the capacity of the truck three to four times.

A heavy-duty snow plow also mounts on the basic attachment. The unit's hydraulic lift raises the plow to any desired position, including a long-range travel position back on the dump body.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 771.

Ellis Joins The Texas Co.

Succeeding D. R. Donlen as manager of the asphalt sales department of The Texas Co., New York City, is T. R. Ellis. Mr. Donlen has retired after 30 years with the firm.

New design doubles life of

crawler tracks

There are two reasons for the spectacular record of KENSINGTON crawler tracks on Minnesota's rugged Iron Range . . . (1) improved design, and (2) superior wear-resisting alloyed manganese steel.

First . . . KENSINGTON engineers have designed a one-piece rail that ends the twisting and weaving which contributes to so much wear in ordinary tracks. Further rigidity and near-perfect alignment is gained by use of heat-treated alloy pins pressed tightly in place under high pressure. Grousers are heavied-up at all vulnerable parts to resist bending and breaking.

Yet, despite these important design changes, KENSINGTON *rails and grousers are interchangeable with the original parts furnished with your tractor.*

Second . . . the hard, KENSINGTON-developed alloyed manganese steels actually fight back against wear. They constantly develop extra surface hardness when exposed to friction, abrasion and impact.

KENSINGTON tracks arrive from the factory ready-assembled.

Learn for yourself how KENSINGTON tracks will lower your crawler maintenance costs and improve your operating efficiency. Coupon will bring details.

Kensington STEEL COMPANY

SUBSIDIARY OF POOR & CO., CHICAGO

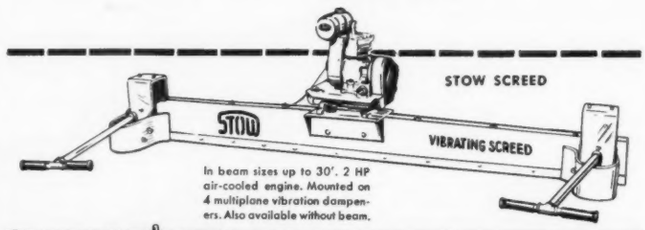
KENSINGTON STEEL CO.
Dept. A, 505 Kensington Ave., Chicago 28, Ill.

● Please send information on crawler tracks for tractor described below. I understand I will be under no obligation.

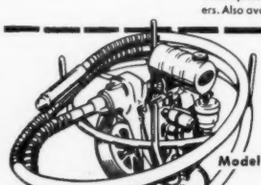
Make of tractor_____
Model_____ No. tracks per belt_____
Width of grouser_____
NAME_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE_____
STATE_____

A maintenance crew uses a McConnaughay Model HTD bituminous patch mixer to patch a section of highway near Seward, Alaska. This photograph illustrated "Improving Highways in Growing Alaska" in the November issue of CONTRACTORS AND ENGINEERS, and the accompanying caption incorrectly identified the equipment. *Ray Day Photo*

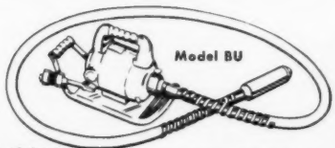
Concrete facts about Concrete Vibrators and Screeds



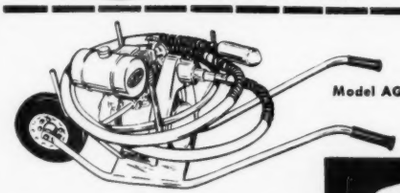
In beam sizes up to 30'. 2 HP air-cooled engine. Mounted on 4 multiplane vibration dampeners. Also available without beam.



2 HP 4 cycle air-cooled engine. Delivers 6000 to 9300 Available with wheelbarrow mount.



2 HP at 9000 VPM 115 V. AC or DC



4½ HP 4 cycle air-cooled engine. Mounted on wheelbarrow for easy maneuverability. Delivers 6000-9300. Available without wheelbarrow.

Here is the name you want!

STOW

The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so *attachments may be used directly on the vibrator shafts.*

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around manhole covers and obstructions.

See your STOW distributor about STOW vibrators and screeds today. Send for free Bulletin 526.

STOW MANUFACTURING COMPANY
40 Shear Street Binghamton, New York

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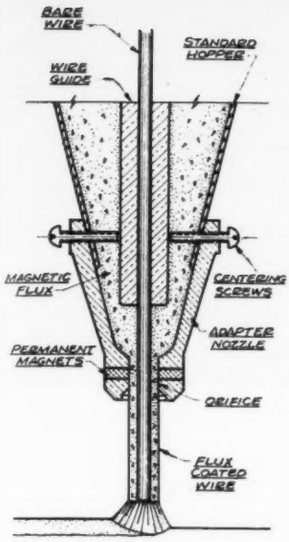


A cross-section of the nozzle for adapting semi-automatic welders to magnetic flux.

Semi-Automatic Welder Uses Magnetic Flux

■ An inexpensive nozzle adapter for the conventional semi-automatic, or "squirt", welder makes it possible to deposit various alloys at speeds far greater than can be obtained by ordinary manual welding, according to the Stoody Co., 11936 E. Slauson Ave., Whittier, Calif. With the use of the device, the rate of deposit is said to exceed that of the fully automatic electric welding head.

The process uses the magnetic field created by the passage of electric current through the bare electrode, plus a magnetic alloy flux which coats the wire immediately ahead of the welding arc. The operating cycle is completed by the use of permanent magnets in the nozzle adapter which act as a dam to the flow of flux whenever the arch is broken. The adapter tip replaces the standard tip, centers the wire to assure a concentric flux coating, and governs the amount of flux applied to the wire.

As applied to build-up and hard-facing, the magnetic process provides deposition rates of 8 to 20 pounds of deposited metal per hour, using 5/64 or 3/32-inch wires. The deposits are sound and have the consistency and uniformity characteristic of the automatic welding method. Time lost in changing electrodes is eliminated, and there is no stub-end loss. There is no need for maintaining large stocks of various electrode diameters. Welding time and material costs are therefore shown to be markedly reduced.

By comparison with the semi-automatic hard-facing method that uses an alloy-submerged melt flux, the magnetic process eliminates considerable waste, since all the flux applied to the wire is consumed. This feature also makes flux recovery equipment and screening for re-use unnecessary. Furthermore, with the magnetic process, the welder uses an open arc which allows him to see the actual welding at all times. This gives him better control of the deposit and permits the hard-facing of irregular-shaped parts. No flux dams, jigs, or fixtures are needed.

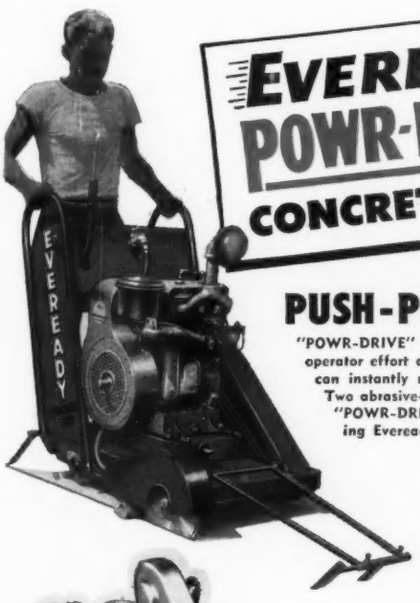
The Stoody Company has developed a group of magnetic flux materials designed for both build-up and the application of hard-facing overlays. The first in this group is Stoody Magnecote 301, which produces a manganese deposit of full Hadfield properties. Literature describing the alloy flux and the adapter nozzle is available.

For further information write to the company, or use the Request Card at page 18. Circle No. 784.

Pittsburgh Steel Promotes

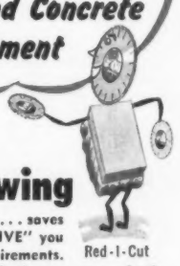
The former chief engineer at its Allenport, Pa., plant, Herbert A. Long, is now chief engineer for the Pittsburgh Steel Co., Pittsburgh 19, Pa., with full supervision over engineering at the Allenport Works, the Monessen, Pa., plant, and the Thomas Strip Division at Warren, Ohio.

The Model 8 Adnun Jr., a smaller version of the Adnun Black Top Paver, is shown working behind the towing truck that dumps into the unit's 2-ton hopper. A 12-hp engine supplies power for maneuvering backward and forward and for traveling empty. For further information write to the Foote Construction Equipment Division, Blaw-Knox Co., 1916 State St., Nunda, N. Y., or use the Request Card at page 18. Circle No. 748.



EVEREADY POWR-DRIVE CONCRETE SAW

Ask Your EVEREADY Dealer for the Most Complete Line of Masonry and Concrete Cutting Equipment

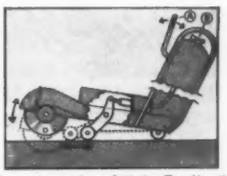


We've taken the— PUSH-PULL Out of Concrete Sawing

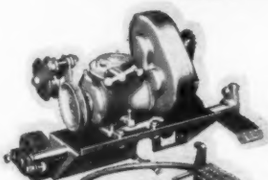
"POWR-DRIVE" smoothly drives saw forward at your controlled speed . . . saves operator effort and increases cutting footage per day. With "POWR-DRIVE" you can instantly regulate the cutting speed to your various cutting requirements. Two abrasive-coated wheels act as a friction drive in contact with both rear saw wheels. "POWR-DRIVE" is engaged or disengaged by a convenient foot lever control. See the amazing Eveready "POWR-DRIVE" Concrete Saw at your local Eveready Dealer.

PATENTED EVEREADY FEATURES

Shown at the right are three exclusive features that make EVEREADY the fastest, most efficient concrete and asphalt cutting saw. Other features are: Dashboard controls for greater ease in operation and maneuvering; blade depth control that permits sawing to a specified depth.

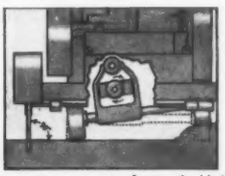


Two easy strokes of Hydra-Eze Handle (A) and hydraulic power lifts blade fast —straight out of cut. Quarter turn of Hydra-Eze Blade Release Lever (B) and hydraulic power feeds blade gently, smoothly into material.



BUY COMPLETE OR ADD THE NEW EVEREADY POWR-DRIVE KIT LATER

The "POWR-DRIVE" Kit comes completely assembled . . . only four holes—four bolts are needed to install the kit on any Eveready Concrete Saw. "POWR-DRIVE" Kits are sold only by authorized Eveready Dealers.



On rough or uneven surfaces—the blade on an EVEREADY Concrete Saw always cuts in a perfect, true, vertical plane. TRI-MATIC BLADE ALIGNMENT prevents binding, twisting, or tilting of the blade as the saw moves over uneven or broken surfaces.

"POWR-DRIVE" cuts MORE Concrete Every Hour . . . Cuts Costs on Every Job! and EVEREADY'S "PROVEN QUALITY" is Your Guarantee for "PROVEN RESULTS"!

EVEREADY RED-I-CUT DIAMOND BLADES

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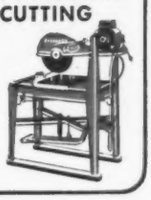

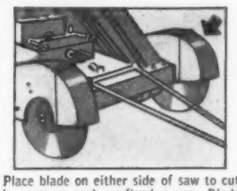

Place blade on either side of saw to cut in corners and confined areas. Blade guard, water hose, and front guide wheel marker assembly are all interchangeable.

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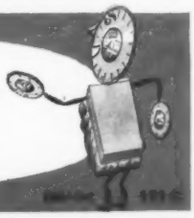
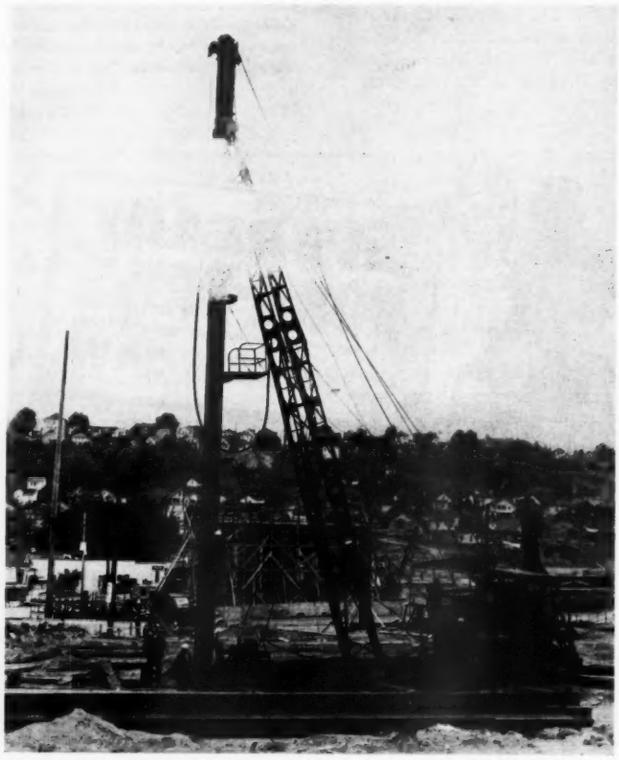


Pile Driving Difficult On Overpass Project

Hardpan, squeezing clay cause substitution of H-beams for steel shell piles on twin traffic viaducts

Steel reinforcing for one of the piers is jockeyed into position by a Browning truck crane. Wood forming was used throughout the project. *Ray Day Photo*



A Raymond skid rig with a single-action hammer in a set of leads 65 feet high starts driving a steel H-beam pile into place. *Ray Day Photo*

ONE DAY THIS SPRING, the plug will be pulled from one of the worst traffic bottlenecks in Seattle, Wash. That day will mark the completion of the Rainier Overpass, which will carry Rainier Avenue traffic over State Highway 2. The mushrooming residential growth on Mercer Island, in Bellevue, and at other points across Lake Washington's Pontoon Bridge have swelled the morning and evening traffic in the area to a point where something had to be done to alleviate the choked-up conditions at the intersection of the two important arteries.

What is now being done will result in a structure 1,839 feet long, of which 1,075 feet will represent the new reinforced-concrete overpass. Actually, the overpass is two similar viaducts, separated to provide space for the construction of another 28-foot bridge which will serve future vehicular tunnels through Beacon Hill. Approaches, ramps, and accessory construction will assist the overpass in clearing up the snarled conditions during the peak morning and evening rush hours.

General contractor for the $1,248,-067 project is the Dahlgren Con-

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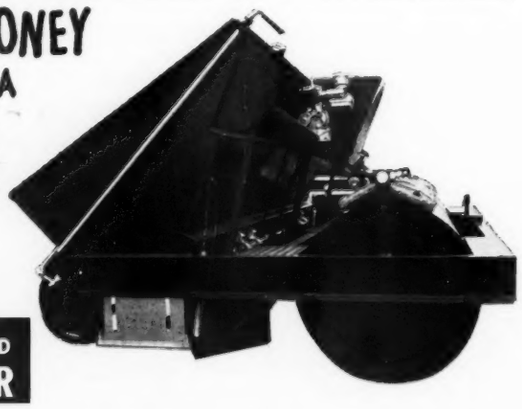

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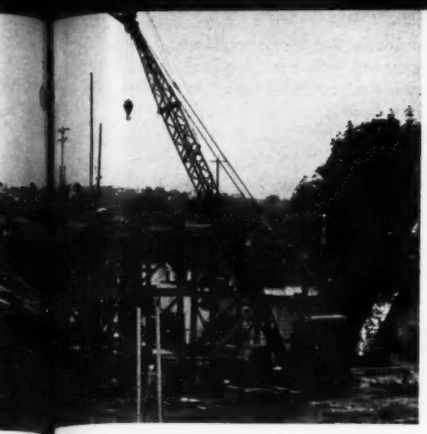


An Insley K-12 backhoe pre-excavates for the pile-driving rig. *Ray Day Photo*

struction Co., Seattle. Plans for the job were formulated by engineers of the Washington State Highway Department and the city of Seattle. Approximately 50 per cent of the work has been subcontracted.

Designed for H20-S16-1944 loading, the twin structures have bridge decks 52½ feet wide and ramps 18 feet wide. The structural portion calls for a reinforced-concrete pier and cap arrangement, with concrete girders and deck. Because of the importance of doing the job without interfering with the traffic along Rainier Avenue, the girders crossing the street will be of steel so that there will be no need for underpinning between the limits of the roadway. The concrete deck will be 6½ inches thick.

Tough Pile Driving

The pile driving subcontract of the Raymond Concrete Pile Co., New York City, represents some of the most difficult foundation work that outfit has done in the northwest, mainly because of the combination of an extremely hard formation near the surface and soft squeezing clay under pressure below—a composition resulting from the stream and marsh which covered the area years ago. Specifications called for 800 concrete piles. driven to 35-ton bearing values.

The Raymond company brought in a crawler-mounted pile driver with a Raymond double-action hammer in a set of leads 88½ feet high and a skid rig carrying a single-action hammer in a set of 65-foot leads. On the latter, it was necessary to set cribbing and, in some cases, to drive wood piles as underpinning beneath the cribbing and caps. Large wooden timber mats, standard equipment for Raymond crawler rigs, were used under the larger machine.

Trouble developed immediately because of the difficulty encountered in driving a Step-Taper shell through the 20-foot-thick hardpan. When this problem was solved by the use of Insley K-12 backhoe pre-excavators, the squeezing clay began to collapse the shells before they could be filled with concrete. In many cases, a Step-Taper shell would collapse soon after the driving mandrel was pulled.

The solution to this headache was a pipe pre-excavator shell. The shell was driven down through the hardpan and then pulled with the help of an extractor and steam pressure sent in through a fitting near the top of the device. The earth-hardpan plug was blown out by steam pressure.

Pile driving proceeded slowly; the average was 10 piles per shift. Around this time, too, a strike in the hoisting engineers' union shut down the job for about three weeks. The combination of the strike and the slow progress has pushed back the completion date of the project to sometime this spring.

Where the squeezing clay made the driving of Step-Tapers impossible, 12-inch H-beams were substituted. To get the same bearing values, these beams had to be up to 72 feet in length. Concrete piles were about 60 feet long. After the H-beams were substituted, the work went forward a little faster.

Concrete Work

As soon as the pile driving was completed, the Dahlgren crews moved in to begin the concrete work. Wood forming was used throughout the project. The pier shaft forms were made up in panels in the shape of rectangular boxes with the lids off. These boxes were set in place by a Browning truck crane. After the reinforcing steel was put in, the lids were nailed on to complete the forms. Steel Baker-Roos square clamps were centered at 9 inches to tie the forms and prevent spreading when the concrete was placed.

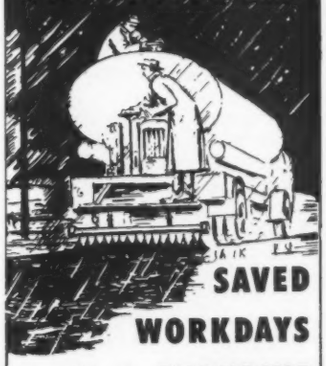
One of the major timber operations was connected with supporting the various deck and girder pours from beneath. The average deck pour was carried from below on four sets of pile bents, seven piles per bent, capped by 12x12 timbers and sway-braced by 2x8 and 3x6 timbers. Centered over each wood pile were three 6x14 fir joists which carry the deck panels. All exposed concrete on the deck, like that on the pier shafts, was formed against plywood facing.

The concrete was furnished in truck mixers by the Pioneer Sand & Gravel Co., Inc., Seattle. The truck mixers dumped to the hopper of a Wagnermobile tower, which lifted the concrete to placing level. On deck pours, the concrete was taken from the tower transfer bin by two Gar-Bro Power-Carts.

The pier shafts were poured from the top by a 1-yard Gar-Bro transfer bucket swung from the Browning truck crane. The concrete was trained to the bottom of the pour by a Gar-Bro hopper and elephant

(*Concluded on next page*)

1. STRENGTHENS THE BOND
2. PROTECTS AGAINST WATER



SAVED WORKDAYS on N. J. TURNPIKE

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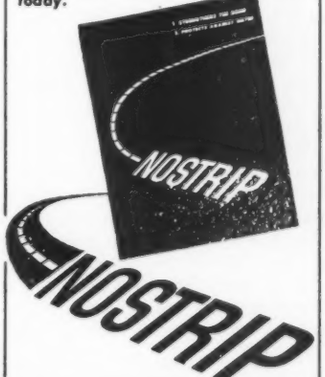

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The casing tool, which punches the 60-foot-deep holes for the vertical sand drains, is driven by a Vulcan hammer. The leads are supported by a Marion crane.
Ray Day Photo

(Continued from preceding page)

trunk. Use of the elephant trunk prevented segregation and made the concrete easier to vibrate with small internal-type machines. All concrete work is water-cured.

In addition to complicating the pile driving, the composition of the earth in the area created another design problem: that of providing for the settlement of the several high embankments which will carry approaches and ramps to the overpass. Vertical sand drains, drilled 60 feet deep and 18 inches in diameter, are taking care of this problem. There are 1,500 vertical drains totaling 37,000 linear feet. A 3-foot sand cushion tying the tops of the drains together underlies the main earth embankments. As the ground beneath settles, the water is squeezed up to the surface and drained away.

Construction of the vertical sand drains has been subbed to the Larsen Construction Co., Inc., Seattle. Building of the system essentially involves drilling a hole through the soggy material which is expected to settle, filling the hole with sand, and tying all the holes to an open-graded blanket of material which will allow the water to work up and out of the squeezing formation.

Larsen is using a Marion crawler crane with a 70-foot boom and a 60-foot set of hanging pile-driver leads. A Vulcan No. 1 steam hammer in the leads drives the 18-inch casing tool which punches the necessary hole. A small upright boiler mounted on the rear of the crane acts as power for the hammer and helps compensate for its weight.

The casing tool has a heavy driving shoe with lugs welded on to keep it centered. When the tool gets down to solid refusal material below the bog, it is filled with sand by a 2-yard hopper-type bucket carried from a cable on the leads. The hopper bucket is filled by a Scoopmobile from a nearby supply pile.

When the casing has been filled to ground level, it is slowly pulled out with the help of a Vulcan extractor. As it is pulled, the driving shoe on the bottom comes loose and tips up with the aid of a chain anchored inside the casing. The procedure is similar to the opening of a flap valve in a pipeline.

Personnel

Louis Bodeen is superintendent for the Dahlgren Construction Co., and Dean Stone is superintendent for the Raymond Concrete Pile Co.

THE END

Literature on Conveyors

■ Conveying equipment is illustrated in a catalog from The Rapids-Standard Co., Inc., 342 Rapistan Bldg., Department GC, Grand Rapids 2, Mich. The new brochure has photos, specifications, and application suggestions on the complete Rapistan line of portable and permanent-type belt units, gravity wheel and roller conveyors in steel and lightweight aluminum, and industrial casters and hand trucks for wide range of handling jobs.

It also explains and shows graphically how the conveying equipment can be used as separate units, or combined in a variety of ways to fit individual handling problems.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 707.

Stress-and-Strain Book

The third edition of "Formulas for Stress and Strain", written by Raymond J. Roark, professor of mechanics at the University of Wisconsin, has been published by the McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York City. The volume is designed to be useful as a handbook for engineers who are concerned with machine and structural design. It is also excellent as an auxiliary text for courses in stress analysis and elasticity, according to the publisher. A copy sells for $7.50.

The book is wide in coverage, presents a great number and variety of cases, gives the definite usable form of the formulas, and has a compact tabular arrangement which facilitates the location of particular cases of interest. Experimental data and empirical formulas have been revised to bring them in line with the latest available information.

NEW LORAIN

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THE *Lowest Priced* MOTO-CRANE® YOU CAN BUY!

Rugged, husky, rock-digging type, all-welded hoe boom of tapered gooseneck design—14 ft. boom—5 ft. stick—⅜ yd. bucket.

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New—45 M.P.H. Carrier . . . The MC-104 Carrier is an entirely new design, developed exclusively as a shovel-crane mounting. Powered by a Ford engine, it will scamper from job to job at speeds up to 45 m.p.h. It has 8 forward speeds; 2 in reverse. Its "6x4" drive delivers power to both rear axles. Ten big 9:00x20 tires provide soft ground flotation for off-the-road travel. All mechanism is surrounded by a husky, torsion-resisting and stress-resisting frame featuring 15-inch deep side members.

New "TL" Features At Low Price... Next, look upstairs at the Turntable . . . here again is an easy-to-service industrial Ford engine. You'll find a Turntable design that has "borrowed" heavily from

● Moto-Crane is the registered trade mark of The Thew Shovel Co., identifying a completely Thew-designed and Thew-built machine consisting of (1) a Turntable with its own engine for all shovel-crane operations and (2) a rubber-tire Carrier with its own engine and automotive-type drive, designed and built exclusively for shovel-crane service.

PRICE IS LOW... *QUALITY* IS TOPS

The Pioneer Model 33G Triplex plant has a larger jaw crusher than previous models.

Portable Gravel Plant Handles Larger Rocks

■ A recent addition to the line of portable gravel plants built by Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn., is the Model 33G Triplex. It is designed for use in areas where pits contain a relatively high percentage of big boulders.

An important feature of the crushing and screening plant stressed by the manufacturer is an 18 x 30-inch primary jaw crusher in place of the usual 10 x 36-inch crusher. In addition, the unit's 30 x 18-inch triple-roll secondary crushing unit permits two almost simultaneous passes at the rock or gravel. All major units of the plant are mounted on a single chassis for easy portability.

It is pointed out that the larger jaw crusher and the triple-roll secondary crushing unit eliminate the need for an additional rock plant to handle the larger boulders. Other basic units of the plant are a single-deck plate scalping screen, a 1½-deck secondary vibrating screen, a hopper, a mechanical feeder, and the necessary conveyors.

All the major units are assembled on a welded-steel truck frame which in turn is mounted on a rear equalizer and single front dolly with 12 pneumatic tires. Travel length of the plant less towing hitch is 43 feet; travel width is 9 feet 8 inches; and travel height is 12 feet 6 inches.

For further information write to the company for Bulletin 646, or use the Request Card at page 18. Circle No. 702.

Bottom-Fired Kettles For Bituminous Material

■ A line of bottom-fired bitumen-heating kettles is illustrated in literature from the Aeroil Products Co., Inc., 75 Wesley St., South Hackensack, N. J. The Type Z bottom-fired kettles shown are manufactured in four basic sizes with 80, 115, 165, and 230-gallon capacities. Built on rigid all-welded steel channel frames, the kettles are offered in a choice of pneumatic, hard rubber, or steel tire mountings. Construction details covered include a steel-plate tow eye, shock absorbing semi-elliptical springs, and a strong front drop leg support that holds the kettle steady when detached from the towing vehicle.

The literature also has a discussion of the heat flow in the kettles, as well as details on a dividing screen, a draw-off cock, and other features found in the line. Optional equipment which is available includes a power spray, a hand spray, a barrel hoist, and a hall-type hitch.

To obtain this literature write to the company, or use the Request Card that is bound in at page 18. Circle No. 686.

Roofing and Siding Of Aluminum Sheets

■ A new aluminum roofing and siding product said to reduce the amount of metal normally used in side laps with conventional metal sheets is announced by the Building Products Division, Reynolds Metals Co., 2500 S. 3rd St., Louisville, Ky. The 8-V crimp roofing and siding material is manufactured as a companion product to the company's 48-inch corrugated roofing. The new wide sheets, according to the manufacturer, provide twice the coverage of a standard-width sheet, resulting in economies in application costs.

The new material is available in .019 and .024-inch sheets. Both gages are embossed for beauty and rigidity. Six to twelve-foot lengths are available in one-foot increments.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 796.

For lifting crane, clamshell or dragline service—25 ft., 2-piece crane boom—bolted butt-flange type connection—center sections available. Also, optional crane equipment for specific applications.

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Thew's time and field proved "TL" design and highest quality. 18 anti-friction bearings on the Clutch Shaft alone . . . "packaged component" design which permits quick switching of interchangeable Hoist Shaft, Clutch Shaft and Engine in complete units. All operations are controlled by only 5 interchangeable shoe clutches.

New Booms — New Jobs . . . You can use the "MC-104" with any of 5 interchangeable booms for any *present* or *future* job . . . shovel, crane, clamshell, dragline or hoe . . . each of which has been *newly* designed to bring to the "MC-104" the tops in operating advantages.

Now — See For Yourself . . . No amount of words or reading can tell you all about the "MC-104". You have to see it working to see how it brings you a new standard for *high quality* in the small machine field. Best of all, you'll like its *low price*. So, ask your nearest Thew-Lorain Distributor for a demonstration of the "MC-104" and see for yourself how Thew-Lorain makes it possible for you to get *so much for so little*.

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Avoid Legal Pitfalls

Edited by A. L. H. STREET, Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Payment Bonds on Federal Projects

THE PROBLEM: *Contractors on a Federal job, who had given a payment bond, knew that a subcontractor was in financial difficulties and that receipts for payments issued to the subcontractor by materials suppliers were false. The contractors did not attempt to reject delivery of additional material furnished the subcontractor. When sued on the payment bond, could the contractors deny the right of the suppliers to collect for the additional materials that had been furnished the subcontractor?*

THE ANSWER: No. (Moyer v. United States, 206 Fed. 2d 57, decided by the U. S. Court of Appeals, Fourth Circuit.)

The decision is not inconsistent with the inability of suppliers to hold a prime contractor liable where they have helped mislead the contractor by issuing false receipts for payment. This case was decided on the fact that the contractors were not led to believe that material bills had been paid.

Official Interest In Public Contracts

THE PROBLEM: *A partnership existing between the mayor of a Tennessee town and his brother collected pay for work done on the town's streets. Was the mayor subject to suit to require him to refund to the town his share of the payments received?*

THE ANSWER: Yes. (Crass v. Walls, 259 S. W. 2d 670, decided by the Tennessee Court of Appeals, Eastern Section.)

The suit was brought under a Tennessee statute which makes it unlawful for any official "whose duty it is to vote for, let out, overlook, or in any manner to superintend any work or any contract in which any municipal corporation, county, or the state shall or may be interested, to be directly or indirectly interested in any such contract."

Under a related statute, the mayor was adjudged to be incapable of holding the same or a similar office for ten years.

The Court of Appeals cited decisions of the Tennessee Supreme Court to the effect that, under the statute, there can be no collection for work done in violation of the law, and that, if payment has been made, a refund can be compelled at the instance of the public body or

THE SHOW MUST GO ON

In the theatre of construction, Naylor light-weight pipe is constantly proving its performance ability. Take this scene from the building of the New York Thruway showing a line of 8-inch Naylor pipe feeding air to rock drills. Despite the constant battering from flying rock and the terrific impact of a fallen tree, there's no interruption in the lines and the show goes on. If this is the kind of performance you need for your jobs, write for Bulletin No. 507 and get the complete story.

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an interested taxpayer.

The court intimated that where an emergency, not created by the official, requires work to be done and there is no one else who can be secured to do it, an exception may exist. The burden is on the official in a case of this kind to prove that such an emergency existed.

Measuring Concrete in Bridge Deck's Surface

THE PROBLEM: *A bridge deck subcontract involved 1,200 linear feet of construction, 33 feet wide and 7 inches thick, with curbs 9 inches high. A curb at one edge was 17 inches wide at its base and 16 inches at the top. The other curb, separating roadway and sidewalk, was 12 inches wide at the bottom and 11 inches at the top. The price was $12 per square yard. Was the subcontractor entitled to payment on measurement including the outer surface of the curbs?*

THE ANSWER: Yes. (Berke, Moore Co., Inc. v. Phoenix Bridge Co., 98 Atl. 2d 150, decided by the New Hampshire Supreme Court.)

The prime contractor insisted that only the upper surface of the deck should be measured. The decision was influenced not only by the wording of the contract, but by the surrounding circumstances connected with making of the contract. The nature of the bids involved on the job, in relation to estimated and actual quantities, was regarded as shedding important light on the question.

The decision is chiefly important because it indicates the desirability of defining "surface" whenever there is to be such irregular construction as was involved in this case.

Engineers' Licenses

THE PROBLEM: *Under Texas law did a registered engineer lose his right to payment for completed engineering services because, when the particular contract was made and performed, his certificate of registration had expired for nonpayment of renewal fees?*

THE ANSWER: No. (Mitchell v. M. M. M., Inc., 261 S. W. 2d 472, decided by the Texas Court of Civil Appeals, Galveston.)

But the decision was influenced by the fact that the statute did not specify that payment for services could not be compelled in such cases. It does not follow that under the laws of other states courts would reach the same conclusion.

Profane Contractor Is Not Liable

THE PROBLEM: *If a contractor believes an owner unjustly refuses to pay a bill, and, in the course of a private telephone conversation, uses abusive language, can the owner force the payment of damages on the ground that the abuse humiliated him and caused him to suffer mental anguish?*

THE ANSWER: No. (Ex parte Hammett, 66 So. 2d 600, decided by the Alabama Supreme Court.)

In suing a drainage contractor for $3,000 damages, a woman charged that his anger increased as they talked over the phone, until he exclaimed: "You are not the woman I thought you to be, damn you, you are going to pay me. I would not let any —— —— woman get by with that." and so on.

In virtually dismissing the suit without trial and without any determination as to whether the contractor had used the language alleged, the Supreme Court said: "Mere words alone, however abusive or defamatory and unconnected with an assault cannot afford a basis for" suit.

Scraper as "Vehicle" That Must Be Registered

THE PROBLEM: *California statutes require registration of vehicles using the public highways. Did these apply to a scraper designed for automatic pickup and moving of free*

(Concluded on next page)

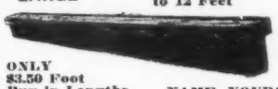
Trade In Your Old Cores

FLASH ! ! DO YOU KNOW
WE MANUFACTURE
ROTARY SWEEPER CORES
Most Any Popular Make To Fit
GRACE • HOUGH • LULL • ROSCO
LITTLEFORD • DETROIT HARVESTER
and Others - Send Your Specs

REFILLS—SPECIALISTS WITH SPRING STEEL WIRES AND FIBRES
REPAIRS - ANY MAKE SIZE OR TYPE - 24 HR. SERVICE

PECKERWOOD STEEL WIRE DRAGS

LARGE 6" Wide—any Length to 12 Feet



ONLY $3.50 Foot
Buy in Lengths
Assemble Your Own
NAME YOURS

Drags Not Staple Set
SMALL
Fits Your Frame
3" Wide
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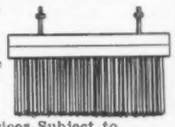
Now $2.50 ea.



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SNAP TIES

STANDARD COIL TIES

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STANDARD HANGER FRAMES

SPECIAL HANGER FRAMES

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CONCRETE ACCESSORIES

Here you see several of the many various types of Form Ties, Anchors and other concrete accessories which SUPERIOR'S many years of know-how and dependability have produced to meet rigid job specifications.

Every item in the SUPERIOR line is specifically designed to provide the most efficient forming method for ordinary foundations, engineering structures, watertight walls and architectural concrete.

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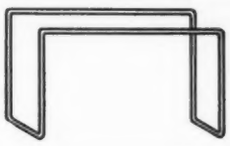
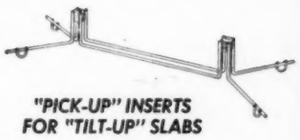


WIRE BEAM SADDLES



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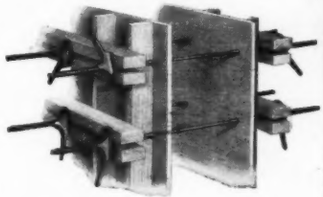

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Steel

Malleable

DOVETAIL ANCHORS AND SLOT

SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois
New York Office—1775 Broadway, New York 19, N.Y. Pacific Coast Plant—2100 Williams St., San Leandro, Calif.

Avoid Legal Pitfalls

earth without regard to place of use?

THE ANSWER: Yes. (People v. Pakchoian, 250 Pac. 2d 767, decided by the Appellate Department, Superior Court, Fresno County, Calif.

Defective Construction

THE PROBLEM: *A construction contract required that a contract grade beam test 2,500 psi. It tested only 1,431 pounds. What were the owner's rights?*

THE ANSWER: He could reject the beam and pay the contractor nothing for it. Or he could do what he did do—utilize the beam in a new plan to correct the deficiency and pay the contractor the value of the beam less the cost of supplementary and usable construction. (Montague v. Milan, 67 So. 2d 351, decided by the Louisiana Court of Appeals, New Orleans.)

Excavation Measurement

THE PROBLEM: *A channel excavation contract provided that the public agency's engineer's estimates as to quantity of work done should be binding, that the channel banks should be on a one to one slope, and that the excavation would be paid for on that basis. The engineer's final estimate showed that the yardage excavated exceeded that included between the slopes due to the necessity for removing material which had fallen into the excavation from the outside. Was the contractor entitled to pay based upon the engineer's estimate?*

THE ANSWER: Yes. (Broward County Port Authority v. Arundel Corp., 206 Fed. 2d 220, decided by the U. S. Court of Appeals, Fifth Circuit.)

The court said the engineer's decision did not contradict the terms of the contract, being based upon the necessity for removing the slough material in order to complete the channel. There being no claim that the engineer's decision was fraudulent, the public agency was bound by it.

Unexpected Rock in Excavation

THE PROBLEM: *A city, in calling for bids for a water main installation, furnished bidders information as to soundings made for presence of rock but did not estimate the quantity to be encountered. The contractor made his own computation but underestimated by 1,876 yards. Was the contractor entitled to collect extra pay?*

THE ANSWER: No. (Chris Nelsen & Son, Inc. v. City of Monroe, 60 N. W. 2d 182, decided by the Michigan Supreme Court.)

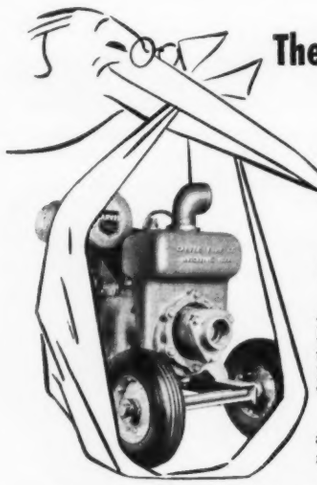
The court said there was merely an implied warranty by the city that the soundings it reported were accurate, and that the contractor failed to prove that they were inaccurate.

Unlawfully Hired Minors: Liability of Contractor

THE PROBLEM: *Under New Jersey law, a prime contractor is liable for workmen's compensation awards to subcontractors' injured employees if the sub has failed to carry insurance. An employer of illegally hired minors is liable for double compensation if they are injured and cannot insure his liability for the extra compensation. Is a prime contractor liable for the extra compensation where the employing subcontractor carried no insurance?*

THE ANSWER: No. (Bertucci v. Metropolitan Costruction Co., 91 Atl. 2d 153, decided by the New Jersey Superior Court, Appellate Division.)

The court reasoned: The prime contractor's liability for injuries to subcontractors' men is statutory and depends wholly upon lack of insurance coverage by the subcontractor. Had the contractor required the sub to carry such insurance, the injured employee could have looked only to the sub for the extra pay. The contractor's failure to require insurance merely obligated him for payment of normal compensation—leaving him with a valid claim against the sub for reimbursement.



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NEW CARVER Contractor Pumps

All the important features contractors have wanted for years are built into this new great line of CARVER Self-Priming Pumps . . . truly in every way "The Contractor's Pump."

Lightning fast prime, really dependable performance and easy portability make them the standouts in the field.

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See your CARVER DISTRIBUTOR.

CARVER PUMP CO., 1404 Hershey Ave., Muscatine, Ia.

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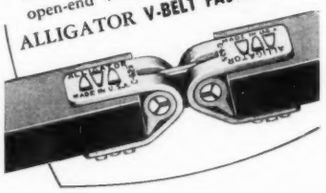
the quality name in pumps

If the correct size of endless V-Belt is not readily available, or if you have to tear down machinery to install, then the best belt to use is open-end V-Belting fastened with

ALLIGATOR **V-BELT FASTENERS**



★ In this way you can make up V-Belts in *any length* to fit *any drive* the fast economical way — V-Belts that perform exceptionally well.

★ In contrast to link-type belts these ALLIGATOR fastened V-Belts have just *one* strong joint . . . *stretch and follow-up maintenance are reduced to a minimum.*

ALLIGATOR **INTRODUCTORY V-BELT DRIVE UNITS** contain V-Belting, Fasteners and Tools — everything you need in one compact package to make up V-Belts quickly. Available in sizes A, B, C & D.

Ask for Bulletins V-215 and V-216
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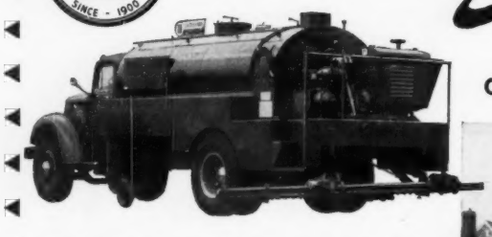
ALLIGATOR
V-BELT FASTENERS

LB LITTLEFORD "Spray-Master"

BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE - 1900

BITUMINOUS DISTRIBUTOR

Gives Low Cost • Mix in Place • Seal Coat Jobs



Here's the Bituminous Spraying unit that will handle Asphalt, Tar, Emulsions, Cut-Back and Road Oils for any road maintenance or construction work. It's engineered to operate with the minimum of cost and designed to eliminate valves, pipe lines and controls, making it simple to operate.

Spray Bars operate up to 24 ft. in width, both the Standard Suck-Back Bar or the Full Circulating Vacuum Flow Bar give 100% efficient spraying action.

Littleford "Spray-Master" Bituminous Distributors are the most modern units on the market today. Made in either truck mounted or semi-trailer models. Sizes range from 800 to 4000 gallons.

"Spray-Master" Distributors are fast heating, safe, efficient, low-cost in operation. See your nearest Littleford Dealer or write.

LITTLEFORD BROS., INC., 485 EAST PEARL STREET, CINCINNATI 2, OHIO

Treated Wood Replaces Steel Beams in Plant

Chemicals stored in warehouse rust structural members; pine timbers installed as substitute

Tie bolts hold the treated timber in place temporarily. They make it possible for the wood members to be fitted precisely into the steel brackets which will permanently clamp the timber to the vertical steel beams.

TEXAS long-leaf yellow pine, pressure treated to a preservative retention of 8 pounds per cubic foot with 5 per cent pentachlorophenol in oil, is being used to replace corroded steel beams in a chemical warehouse in Pasadena, Texas. The horizontal steel beams corroded in less than four years because of the action of chemicals stored within.

In 1949, the Phillips Chemical Co., Bartlesville, Okla., began storing loose ammonium sulfate in the building, which was constructed of steel beams covered with corrugated transite sheathing lined with 2-inch pine planks. Small amounts of the sulfate worked through the cracks in the interior wall and fell on horizontal surfaces of the beams framing the building.

Vertical beams were not affected to any great degree. The horizontal members experienced very rapid corrosion. The steel turned into plates and sheets of rust and, by the summer of last year, the building was in need of major repairs. The Phillips firm decided to rebuild.

Various materials were considered, including concrete and steel in a different structural arrangement. The yellow pine finally got the nod. Timbers 8 x 12 and 8 x 8 were specified and had to be bought in lengths of 26 feet to allow for fabrication to fit irons clamping them to the uprights.

The 144 pieces of treated timber were provided by the Houston Chemical Service, Inc., Houston, Texas. THE END

MIX IT **hot** up to 5 tons per-hour of highest type hot mix

MIX IT **cold** up to 10 tons per-hour of cold patch

WITH THE NEW B-G MIXALL

Barber-Greene Mixall

the answer for all small paving jobs

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Check these Profit making Features of the NEW...

DEMPSTER DIGGSTER® GRD-101

✓ **NEEDS NO WHEEL TRACTION**
Loading of the bucket is accomplished by the exclusive Hydraulic Crowd and Hoist power of the Dempster-Diggster.

✓ **MAXIMUM DUMPING HEIGHT**
This is important because the Dempster-Diggster has the digging height capacity to handle jobs oftentimes expected only of power shovels. The dumping height is 9'6" and the digging height is approximately 15 feet. This enables the Dempster-Diggster to work with high dump equipment.

✓ **TORQUE CONVERTER**
Excavating shovels and front end loaders have to take the abuse and punishment of intermittent jolts. The Dempster-Diggster is constructed and built, not only to accept this at its full value, but to smooth out the sudden jerking and jolting by means of a torque converter. The torque converter is a mechanical feature, but its effect on greater efficiency of the machine and lower operating costs is so great it is one of the important reasons why you want a Dempster-Diggster!

✓ **MINIMUM TURNING RADIUS**
The outside turning radius of the Dempster-Diggster is only 18'3".

✓ **ELECTRIC BUCKET TRIP**
You get a machine with an automatic electric bucket trip for dumping drop bottom digging bucket . . . giving you instant dumping and instant closing of bucket.

✓ **TRUCK-SPEED MOBILITY**
Dempster-Diggster moves from job to job without the use of hauling equipment or can be towed behind a dump truck with the use of a tow bar.

✓ **HYDRAULICALLY STEERED**
Your Dempster-Diggster has positive hydraulic steering booster which is operated by separate, individually driven pumps. Your operator stays fresh, will not tire with this finger-tip steering.

Here's a shovel that won't skim the bank or bottom—but gets a full bucket with every stroke. Here's a shovel that gives you the extra speed on the job and to and from jobs that means extra profits to you! Pound for pound, dollar for dollar, the Dempster-Diggster will out-dig and out-load any other available competing machine in tough going! Let us prove that statement! Write for complete information, including Folder No. 3116.

You get a truck payload with a Dempster-Diggster. Note truck is loaded to maximum heaped capacity, yet Dempster-Diggster has ample clearance.

Photo above shows bucket against front of frame in the position which enables Dempster-Diggster to dig 15 inches below grade.

DEMPSTER BROTHERS, 424 Shea Bldg., Knoxville 17, Tennessee

Distributor Doings

Brown-Bevis Opens New Plant

The Brown - Bevis - Industrial Equipment Co. has moved to new quarters in the central manufacturing district at 6550 E. Washington Blvd., Los Angeles, Calif. The firm, which has branches in Bakersfield, San Diego, and Riverside, Calif., was previously located at 4441 Santa Fe Ave.

The present organization is the result of a merger a year ago by the Industrial Equipment Co. and the Brown-Bevis Equipment Co. The firm deals in the sale, servicing, and rental of new, used, and rebuilt construction equipment, and maintains a parts department.

Among the manufacturers handled by Brown-Bevis are Barber-Greene Co., Bay City Shovels, Inc., Butler Bin Co., Chain Belt Co., Eagle Iron Works, The Galion Iron Works & Mfg. Co., The Frank G. Hough Co., Ingersoll-Rand Co., International Harvester Co., Iowa Mfg. Co., Manitowoc Engineering Corp., Metal Forms Corp., Page Engineering Co., "Quick-Way" Truck Shovel Co., Simplicity Engineering Co., Superior-Lidgerwood-Mundy Corp., Tampo Mfg. Co., Unit Crane & Shovel Corp., The Warner & Swasey Co., and Wayne Mfg. Co.

Eeco Names Western Dealers

The manufacturer of the Eeco rock drill, the Eugene Engineering Co., P. O. Box 415, Eugene, Oreg., has appointed distributors for 11 western states and Alaska. Handling the sales of the tractor-mounted rock drills for their respective areas are:

Westmont Tractor & Equipment Co., Missoula and Kalispell, Mont.; Colorado Builders' Supply Co., Denver, Col., and Casper, Wyo.; Western Machinery Co., Phoenix, Ariz.; Wheeler-Kershaw Co., Salt Lake City, Utah; Intermountain Equipment Co., Boise, Idaho, and Spokane, Wash.; Seitz Machinery Co., Inc., Billings and Great Falls, Mont.; R. L. Harrison Co., Albuquerque, N. Mex.; Pacific Hoist & Derrick Co., Seattle and Puyallup, Wash.; Northern Commercial Co., Alaska and the Yukon; Cascade Equipment Co., Eugene, Oreg.; and Smith Booth Usher Co., Los Angeles, Calif.

Nordberg Names Florida Dealer

Handling Type 4FS engines in southern and central Florida for the Nordberg Mfg. Co., Milwaukee 1, Wis., is J. Frank Knorr, Inc., Miami, Fla. The new dealer has offices at 528 N. W. 7th Ave. in Miami, and at 911 E. Platt St. in Tampa, Fla.

Nordberg 4FS four-cycle diesel engines, ranging in size from 10 to 45 hp, are offered in one, two, and three-cylinder models.

Canadian Equipment Firm To Erect New Building

Plans have been completed and the contract has been awarded for a new building to house the construction machinery division of Wm. Stairs, Son & Morrow, Ltd., Halifax, Nova Scotia, a 143-year-old equipment firm handling Caterpillar, Thew, Blaw-Knox, Buffalo-Springfield, and Iowa Mfg. Co. products.

The new plant, to be erected at the north end of Halifax, will have approximately 20,000 square feet of floor space, including a service shop, parts stockroom, showroom, and offices on the first floor, and a lunch room, conference and projection room, and rest rooms on the mezzanine.

A. D. Stairs is president of the firm. Vice President R. F. McAlpine will be in charge of the new building and the division. Department heads include B. D. Bowes, sales manager; P. C. Hamilton, parts and service manager; and J. W. O'Connell, office manager.

LEADING CONTRACTORS USE McCarthy Drills

PUBLIC UTILITY AUGER DRILL

Bores holes from 4½" to 24" in diameter under sidewalks, roads, building foundations, railroad tracks, landscaped grounds, etc. Fithian Contracting Co., Youngstown, O., using McCarthy Public Utility Auger Drills, completes pipe line jobs, formerly taking weeks, in a few days.

SELF-PROPELLED HORIZONTAL AUGER DRILL

Will bore 6" and 8" diameter holes 120 feet horizontally at rate of six feet per minute maximum. Four individual, self-locking jacks maintain correct drilling level. In one day a New Castle, Pa., operator bored holes of various depths totaling 840 ft. through shale and sandstone, using this McCarthy Auger Drill.

Heavy-Rugged-Powerful

VERTICAL AUGER DRILL

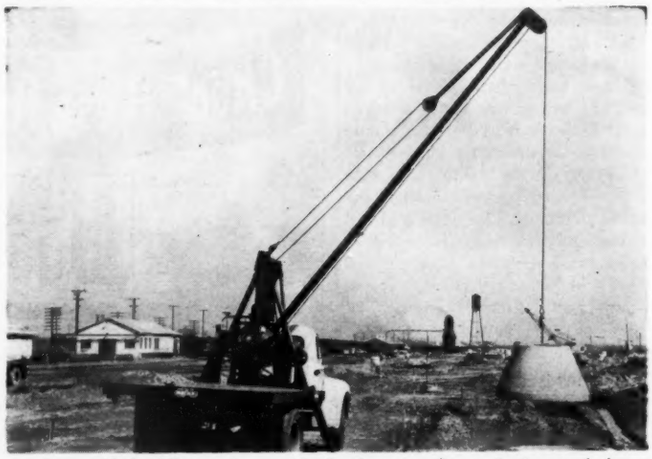
Operating men who have made actual on-the-job tests find the McCarthy Vertical Auger Drill a standout for mobility, stamina, ruggedness and versatility. On a 2-million dollar, 5-mile stretch of superhighway between Hubbard, Ohio, and Sharon, Pa., The Apex Powder Co., Canton, Ohio, cut blasting costs approximately 20% as compared to air, well or churn drilling. Cutting through two large areas of concentrated rock, 150 holes 15 feet deep were bored for each blasting pattern. 3,000 cubic yards of sand rock were moved at each blast. Due to the ruggedness and mobility of McCarthy Drills, there was no time lost. For further information, write Salem Tool Co. and our distributor will contact you.

SALEM DRILLING EQUIPMENT SINCE 1901

THE SALEM TOOL CO.

806 SOUTH ELLSWORTH AVE.
SALEM, OHIO · U.S.A.

Converts truck to truck-crane



Pitman Hydra-Lift, new low-cost hydraulic crane, fits on the frame of almost any truck and converts it to a versatile, highly-mobile truck-and-crane! Lifting capacity is 6,400 pounds; hydraulic boom swings in a complete 180° arc, lifts through an arc of 100°, telescopes from 12 to 17 to 22 feet. Hydra-Lift requires only 40" behind the truck cab, leaving the truck bed free for normal loads. A truck equipped with Hydra-Lift retains its normal mobility; Hydra-Lift can be installed on a tractor-trailer hitch.

Write today for complete information and name of nearest dealer!

PITMAN MANUFACTURING COMPANY
300 W. 79th Terr. Room 300 Kansas City, Mo.

Why use a Big Compressor on air jobs meant for a SCHRAMM 60 C.F.M.?

It costs money to haul a BIG air compressor to a job that can be handled by a smaller unit!

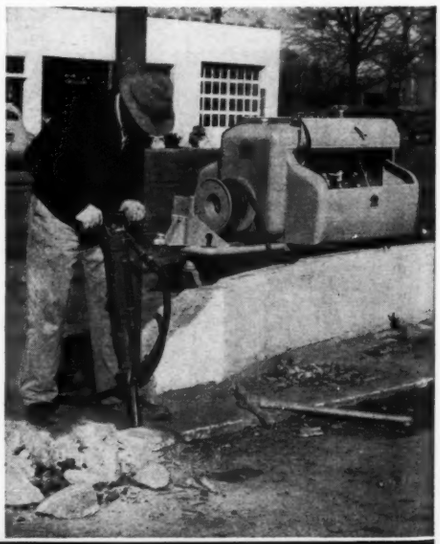
That's why Schramm offers smaller size air compressors — like the Model 60 illustrated — as well as large units — to save you money. Moreover, they embody all the fine features of workmanship and material found in our larger size units.

Popular uses of Schramm smaller compressors include trench digging, backfill tamping, paint spraying and roofing material, operating paving breakers, 20 and 40# rock drills, concrete vibrators, saws, etc.

Tools as well as Compressors are available at once. Compressor sizes range from 20-35-60-105-210-315 and 600 c.f.m. in various types of mountings.

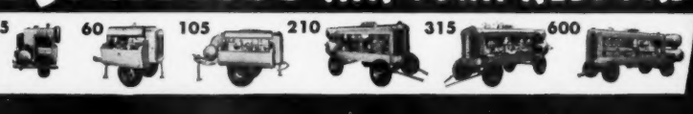
Write today for Bulletin AED

SCHRAMM, INC.
The Compressor People · WEST CHESTER, PENNSYLVANIA



SCHRAMM AIR COMPRESSORS

A SIZE AND MODEL FOR EVERY AIR NEED



Western is P&H Dealer

Harnischfeger Corp., Milwaukee, Wis., has appointed the Western Contractors Supply Co. as a P&H excavator distributor for a section of Illinois and Indiana. The firm is presently located at 3145 W. Lake St., Chicago, but will shortly move to a new 4-acre sales and service site in Melrose Park, Ill.

Western Contractors' specific territory includes Illinois counties north of and including Henderson, Warren, Fulton, Tazewell, McLean, Champaign, and Vermillion. Rock Island County is not included. In Indiana, the firm will cover Lake and Porter counties.

Nelson Division Dealers

Two northern New York equipment firms have been named dealers for Remington stud drivers by the Nelson Stud Welding Division of Gregory Industries, Inc., Lorain, Ohio, national distributor for the power-actuated tool of the Remington Arms Co.

Mills Welding Supply, Inc., 110 E. Utica St., Buffalo, and the Jackson Welding Supply Co., 1225 Mt. Read Blvd., Rochester, are now handling both Remington stud drivers and Nelson stud welding equipment, used to fasten to steel, concrete, or masonry.

Prime-Mover Appointments

Three new distributors, serving areas in the southern part of the country, have been appointed by The Prime-Mover Co., Muscatine, Iowa, manufacturer of a ¾-ton-capacity powered wheelbarrow.

The R. S. Armstrong & Bros. Co., 676 Marietta St., N. W., Atlanta 3, Ga., will serve as a distributor in its area. The other dealers appointed are The Brady Co., 3029 3rd Ave., S., Birmingham, Ala.; and F. M. Equipment Co., Inc., 515 S. Industrial, Dallas, Texas.

Bucyrus-Erie Names Distributor

Sales and service on excavator equipment manufactured by the Bucyrus-Erie Co., South Milwaukee, Wis., are now offered by J. P. Waite, Inc., 3304 W. Pierce St., Milwaukee, Wis. The new dealership covers Wisconsin and upper Michigan.

Appointed by Transport Trailer

The Mississippi Road Supply Co., Jackson, Miss., has been appointed exclusive distributor for Transport Trailers, Inc., Cedar Rapids, Iowa, manufacturer of a line of heavy-duty low-bed and platform trailers

Distributor for Adjustomatic

Sioux Machinery & Supply, 5th at Jones, Sioux City, Iowa, has been named exclusive distributor in its area for Adjustomatic scaffolding. The appointment was made by the manufacturer, Automatic Devices, Inc., St. Louis 12, Mo.

Clark Equipment Dealers

Four new dealers have been appointed by the construction machinery division of the Clark Equipment Co., Buchanan, Mich., to handle the earth-moving equipment formerly manufactured by the Michigan Power Shovel Co., acquired by Clark last May.

The dealers are: Berry Bros. Machinery Co., Dallas, Texas; Furnival Machinery Co., Harrisburg, Pa.; Henry H. Meyer Co., Inc., Baltimore, Md.; and George P. Williams Co., Cleveland, Ohio.

Huber Appoints Casey-Metcalf

Representing the Huber Mfg. Co., Marion, Ohio, in 12 southern California counties and Clark County, Nev., is Casey-Metcalf Machinery Co., Inc., Los Angeles, Calif. The distributor, with headquarters at 5515 E. Slauson Ave., will handle Huber's complete line of three-wheel and tandem rollers, motor graders, and the Huber Maintainer.

Three Baker-Lull Distributors

Three firms in New York State have been appointed distributors of self-contained material-handling equipment manufactured by Baker-Lull Corp., Minneapolis, Minn. Hubbard & Floyd, Inc., 151st St. and Gerard Ave., New York City, and T. E. Potts Equipment Co., 2260 Sheridan Drive, Buffalo, will serve the company in their areas. In Syracuse, L. B. Smith, Inc., 357 W. Fayette St., is the new Baker-Lull dealer appointment in that locality.

now...you can RENT

The Neo-Flasher BARRICADE

FOR NO MORE THAN THE OPERATING COST OF ONE KEROSENE TORCH

NO MESSY KEROSENE • NO BARRICADES TO BUILD • NO STORAGE PROBLEMS • NO WEEKEND PREMIUM LABOR • NO CAPITAL INVESTMENT

Neo-Flasher Steel Barricade Model A Equipped with reflectorized steel panel, Neo-Flasher Model 1-100-LSR, tamper proof switch and locking device. Your name plate at slight extra charge.

LIGHT PRODUCTS, INC. Dept. CE-3
407-c COMMERCIAL CENTER ST. • BEVERLY HILLS, CALIF.

Wire Rope at Work—Some of the world's most beautiful marble comes from the eighteen quarries of the Georgia Marble Company. Through the years this firm has removed and marketed over 30,000,000 cu ft of the durable crystalline stone, which can be seen in famed buildings and memorials in every state of the Union.

The block shown in the picture, a dozen tons of particularly fine white marble, was photographed emerging from one of the company quarries near Tate, Ga. This handling job involved a lift of 175 ft, and the hoisting was done by a stiffleg derrick equipped with sound, dependable Bethlehem wire rope. Here, as always, the Bethlehem rope met every demand with plenty to spare, for it is a product made to take such loads in stride.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

MINING • CONSTRUCTION • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

BETHLEHEM WIRE ROPE
BETHLEHEM STEEL

Line of Air Compressors

■ A catalog on its line of air compressors is offered by the Binks Mfg. Co., 3122 Carroll Ave., Chicago 12, Ill. The booklet describes 27 sizes in five types. The new models include single or two-stage units in tank-mounted sizes from ¼ to 15 hp and base-mounted models from ¼ to 20 hp. Portable single-stage units in 2.2 to 105-cfm capacities are also offered.

Among the features of the line are Timken tapered-roller main bearings, lightweight automotive-type rods and pistons, high-efficiency valves, loadless starting, constant level oiling, and a larger cooling surface.

To obtain this literature write to the company, or use the Request Card at page 18. Circle No. 804.

The new Michigan Model C-24 crawler-mounted excavator is part of the newly announced series of ¾-yard machines added to the line made by the Clark Equipment Co.

New ¾-Yard Machines Added to Shovel Line

■ A line of ¾-cubic-yard shovels and cranes has been added to the Michigan line of excavators made by the Clark Equipment Co., Buchanan, Mich. The new equipment is made in two truck-mounted units and one crawler model with a complete assortment of front-end attachments. The truck models are available with either 6x4 or 6x6 drive with optional power steering. Model designations are C-24 for the crawler excavator and T-24 for the truck crane.

Telescoping rear and center outriggers are standard equipment. Among chief improvements are a newly designed operator's cab said to provide good visibility even with long, high boom operations. The operator's cab is separate from the engine cab.

Controls are air-ram operated. Separate controls for each operation permit independent swing travel as well as normal front-end movements. The crawler is equipped with automatic spring-loaded self-locking brakes which are disengaged by air rams when traveling.

Mechanical features of the new excavator include a one-piece cast-steel turntable base with integral hinge-pin bracket and roller brackets, six hook rollers on anti-friction bearings, spiral-bevel gears for primary and secondary power reduction from engine to main shaft, independently operated worm gear boom hoists, and a completely redesigned fairlead.

For further information write to the company, or use the Request Card that is bound in at page 18. Circle No. 683.

Airco Film on Welding

A new sound-slide film, "The Guy Behind Your Back", is concerned with the safe use of oxyacetylene cutting and welding equipment. Produced by Air Reduction Sales Co., 60 E. 42nd St., New York 17, N.Y., the film is specifically designed for companies which train their own employees.

Free showings of the 20-minute film can be arranged by writing to local Air Reduction offices. Copies of the film may be purchased at $15 per print.

A list of coming conventions appears on page 15 of this issue.

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51-05 Pants
53-15 Hat

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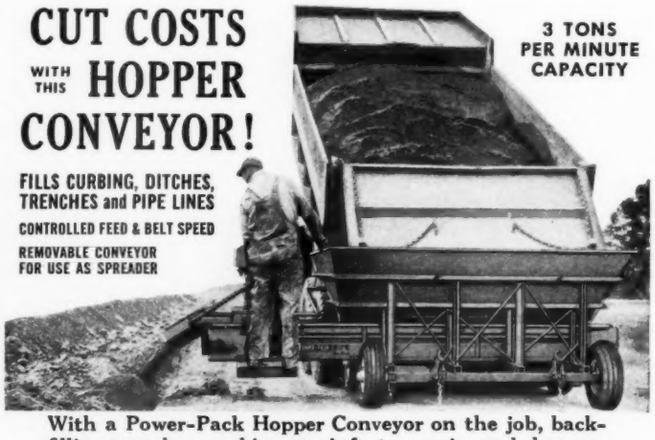

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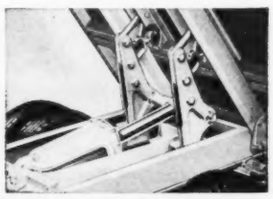

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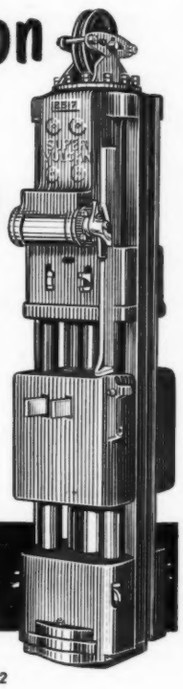

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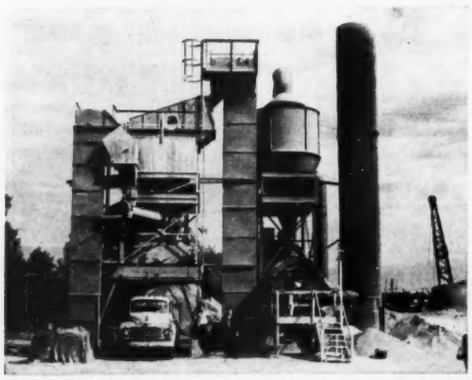

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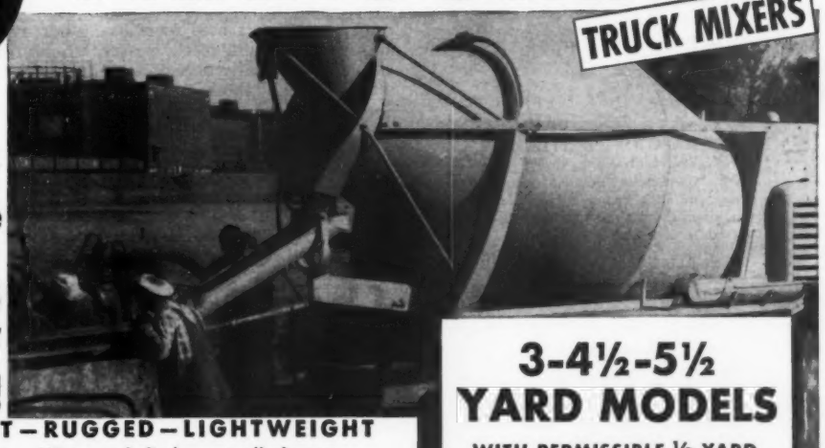

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Manufacturer Memos

Lufkin Rule Revamps National Sales Setup

Two new regional sales divisions have been established by The Lufkin Rule Co., Saginaw, Mich., which, together with the New York and west coast divisions, divide the country into four sales areas. William F. Rockwell has been named manager of the east-central division, and D. F. Oltz has been put in charge of the west-central division.

Thomas W. Wise has been made assistant to E. H. Meibeyer, vice president of the company, to better coordinate administrative matters in the sales department. He will also work on the planning and analyses of sales division operations and objectives.

Dempster Representative

Ken J. Shedd has been appointed district sales representative in the north midwestern territory for Dempster Bros., Inc., Knoxville, Tenn., manufacturer of material-handling equipment and the Diggster shovel and loader. Mr. Shedd is a former sales manager of the Load Packer Division of Gar Wood Industries, Inc.

Two Sales Managers Appointed at Ford

Two new sales managers have been named at the Ford Tractor Division of the Ford Motor Co., Birmingham, Mich. F. W. Conover has been appointed manager of the industrial sales department, and B. A. Te Paske was named manager of the Fordson major tractor and implement sales department.

Mr. Conover, recently returned from active military duty, was national service manager in 1950, before being recalled to the army. Before joining Ford, he had been associated with the Chevrolet division of General Motors and the Firestone Tire & Rubber Co.

Mr. Te Paske was formerly manager of the tractor branch of Ford International. From 1948 until he joined Ford last year he was vice president in charge of sales of Amgears, Inc., a division of the Hupp Corp.

F. W. Conover is manager of the Industrial Sales Department, Ford Tractor Division, Ford Motor Co.

Big Payloads...

ANOTHER ADVANTAGE OF BUCYRUS-ERIE INDIVIDUAL DESIGN

FOR SMALL-JOB PROFITS investigate Hydrocrane, the high-speed truck-mounted, all-hydraulic crane for jobs too small for larger machines. It can be quickly converted to a dragshovel right in the field.

With Bucyrus-Erie Individual Design you get the smooth coordination of hoist, crowd, and swing that assures big payloads on every pass. The operator, working with easily manipulated, responsive controls, finds it easy to heap the dipper, easy to keep those big loads coming all through the shift.

That's because each machine in the Bucyrus-Erie ⅜- to 4-cu. yd. line is designed from the ground up to handle its rated capacity most efficiently. There are no oversize or undersize dippers used to make "different" models. With Individual Design, speed, power, strength and weight are all properly proportioned, and the machine works most efficiently as a whole.

See your Bucyrus-Erie Distributor soon. He'll show you the other great advantages of Individual Design — fast work cycles, low maintenance, long machine life, low operating costs. 23E53

BUCYRUS-ERIE COMPANY
SOUTH MILWAUKEE
WISCONSIN

INDIVIDUAL DESIGN . . . for each model in the line

⅜ to 4 cu. yd. gasoline, diesel, and single-motor electric Shovels, Draglines, Cranes, Clamshells, Dragshovels — Hydrocranes, Hydrohoes.

Kensington Steel Elects

Eugene C. Bauer, Jr., formerly vice president of the Kensington Steel Co., Chicago 28, Ill., has been elected president, succeeding Kenneth Jensen, who will stay on as a consultant.

H. Monteith Albers, formerly sales manager, was elected vice president.

Clark Elects Killebrew As Vice President

The election of Clarence E. Killebrew as vice president of the Clark Equipment Co., Buchanan, Mich., manufacturer of material-handling equipment, has been announced by the firm. Mr. Killebrew was formerly manager for marketing and sales in Clark's construction machinery division.

In addition to being responsible for the sales and marketing of equipment manufactured by Clark for the bulk handling of materials in the construction industry, which were Mr. Killebrew's duties as manager, he will now be in charge of all products sold under the Michigan trade name.

Charles B. Baker, President of Universal Atlas Cement Co.

Baker Succeeds Smith At Universal Atlas

Charles B. Baker, formerly executive vice president, has succeeded Blaine S. Smith as president of the Universal Atlas Cement Co., 100 Park Ave., New York 17, N. Y., a subsidiary of the U. S. Steel Corp. Mr. Smith retired December 31, 1953, after 37 years with the com-

pany. He will still be active, however, in a consulting capacity.

Mr. Baker joined the organization in 1942, becoming secretary the following year and general attorney in 1945. Over the years, he has also held the position of director, assistant to the president, and vice president.

In personnel changes, James T. Maher has been appointed assistant to the vice president of sales in the eastern and southern region, and Brendan J. Whittaker has been made sales manager of the Boston territory.

Robert E. Tanner, new vice president and general manager of the Carver Pump Co., Muscatine, Iowa.

Vice President at Carver

Robert E. Tanner has been elected vice president and general manager of the Carver Pump Co., Muscatine, Iowa, manufacturer of centrifugal pumps for construction. He also assumes the post of general sales manager. A graduate of the University of Minnesota in 1930, he was associated with the Continental and the National Can companies before joining Carver.

Ridge Tool Names Two

Two new sales representatives have been named by the Ridge Tool Co., Elyria, Ohio. The appointments are the result of the retirements of C. O. Hollen as sales representative in New Jersey, Pennsylvania, Maryland, Delaware, Virginia, and Washington, D. C.

Replacing Mr. Hollen in New Jersey; Pennsylvania, east of Lewistown; and Wilmington, Del., is Ralph W. Hamlin from the home office in Elyria. M. B. Williams takes over Ridgid pipe tool sales in Washington, D. C., Maryland, Delaware (except Wilmington), Virginia, and North Carolina.

Pioneer Appointments

Directing the activities of U. S. and Canadian sales representatives of Pioneer Engineering Works, Inc., Minneapolis 13, Minn., is A. J. Belanger, who has been appointed sales manager of the firm.

Mr. Belanger has been assistant sales manager since 1951. Prior to his activities in the sales department, he spent six years in the engineering department, principally on the design and development of the company's continuous-process bituminous plants.

Serving as district sales representative for Pioneer is Elton T. Fair, who will represent the company in Wyoming, the greater part of Montana, the western half of South Dakota, five western counties in North Dakota, and in Colorado. Prior to his appointment, Mr. Fair headed his own equipment distribution firm in Denver, Colo.

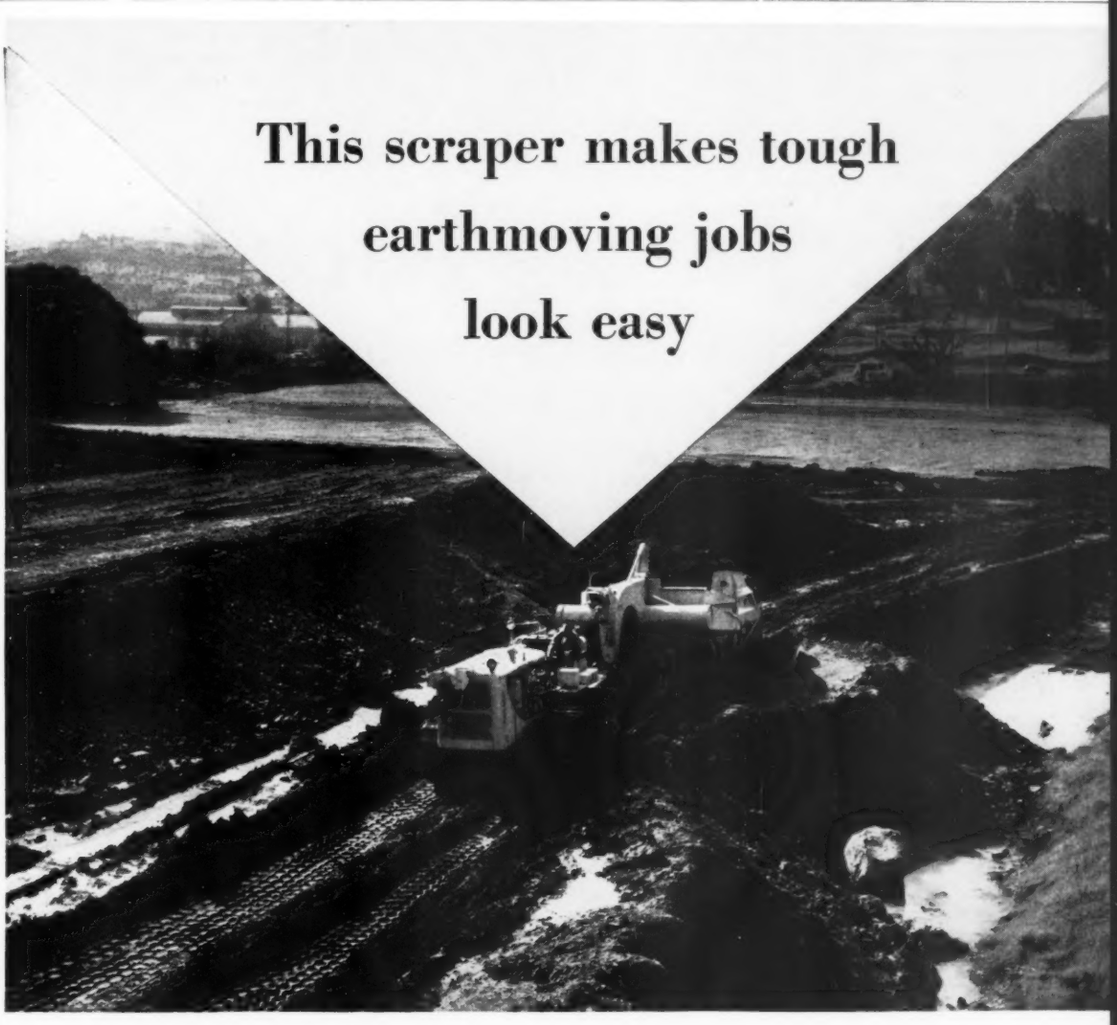
Wozar Heads Dayton Pump

Recently appointed president and general manager of the Dayton Pump & Mfg. Co., 500 N. Webster St., Dayton 1, Ohio, is Louis Wozar. He joined the firm five years ago as assistant to the then president, Frank M. Tait, founder of the firm and chairman of the board of directors.

Mr. Wozar was associated with pump and aircraft companies in executive capacities before joining Dayton Pump. He became an apprentice machinist at the age of 14, immediately after graduating from grammar school. He continued his education over a period of years through correspondence courses and night classes in trade schools and universities.

Twin Disc Appoints

Succeeding Jack N. Yetter as manager of the Tulsa, Okla., district of the Twin Disc Clutch Co., Racine, Wis., manufacturer of friction and fluid drives, is Mel H. Woodward. Mr. Yetter has been appointed manager of sales promotion with headquarters at the firm's home offices.



WORKING on a contract that called for moving 395,000 cubic yards of rock and clay and grading a 70-acre industrial site in 5 months' time, J. O. Archibald of Redwood City, California, needed rugged equipment with plenty of power and capacity. The terrain was half hill and half swamp. Fourteen Caterpillar Diesel Tractors, with Bulldozers and Scrapers, were used in completing the contract, for Mr. Archibald believes in standardizing on big yellow equipment. But he found one of the most efficient units for this type of job was the Cat* D8 Tractor-No. 80 Scraper combination.

The flat-bottom No. 80 is a brute for work. It handles 20 cubic yards heaped on every swing. Positive cable controls permit easy, accurate control of digging and spreading. Big tires give ample flotation in soft ground, and make hauling smooth. The push-plate, extending well back of the tires, allows in-line power for the pusher.

The surest way to *prove* what the No. 80 Scraper can do for you is to see it in action on your own job. Your Caterpillar Dealer will gladly arrange a demonstration. Call him today.

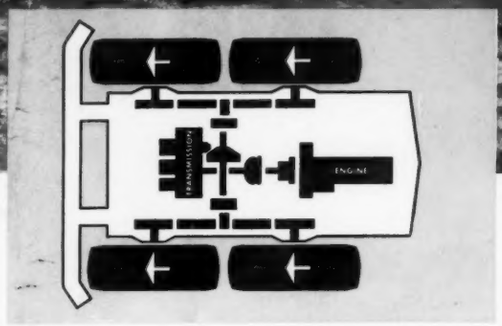
Caterpillar Tractor Co., Peoria, Illinois.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

the tractor with anti-friction drive



Free-rolling tires reduce power loss, upkeep costs

If trucks still ran on metal wagon wheels instead of on pneumatic tires, you'd know what to expect. Slower speeds, harder riding, wasted power, and higher maintenance bills, to mention a few disadvantages. The same limitations apply to slow-moving crawler tractors, compared to rubber-tired Tournatractors. Crawlers naturally run slower — 3 to 8 mph as compared to Tournatractors' 19 mph. And, of course, crawlers ride harder, drive harder, than Tournatractor, and their tracks cost more to maintain.

Think it over

Obviously, with crawlers, you get a major loss of power due to the friction of hundreds of wearing parts grinding in grit. Power that should be converted to speed is spent in turning metal against metal in bearings that just can't be sealed against sand and abrasive materials. So with crawlers you get the slow, "lumber wagon" type of operation . . . plus expense and delay of continuous replacement of ground out sleeve bearings, pins, and track links.

With Tournatractor, big low-pressure tires roll *over* grit — do not grind *in* it. These tough, flexible treads operate on pressures as low as 12 lbs., provide top traction and flotation in any footing. And from engine to tire, your load rides on fast, smooth anti-friction bearings sealed against grit, dust, and water!

Tournatractor tires give you even better service than truck tires. They're bigger, stronger, tougher . . . better adapted to withstand shocks. Their tapered-bead provides *double* the rim-grip. This, plus wider rims, reduces tube, flap, and bead chafing . . . permits retreading . . . gives greater operating stability. Rayon-cord construction adds flexibility, strength, and long life to tire carcass.

Put this anti-friction, low-upkeep, speed and power to work for *you*, with 186 h.p., 19 mph Tournatractor. Ask for cost and output data on work like yours.

Tournatractor anti-friction drive gives you:

Greater speed for getting jobs done. Tournatractor's 19 mph speed forward (8 mph in reverse) increases daily output, reduces net cost. Outproduces crawlers 2 to 1.

Less expense . . . low-pressure rayon-cord construction resists body breaks, makes tire beads last longer. Time and expense of track maintenance are eliminated for good.

Less engine power wasted because rolling resistance and friction with big rubber tires is far less than that of slow-moving tracks, with their hundreds of moving parts.

Better service from retreads because tapered-beads grip tighter, tires have a minimum of bead-chafing, stand up for recap service.

Greater traction, flotation for successful operation in sand, mud, snow or ice. Goes anywhere — over rails, curbs or pavement without planking.

Greater shock absorption . . . less equipment maintenance needed . . . safer control . . . less operator fatigue.

Job-to-job mobility . . . fast, profitable job-to-job and on-the-job mobility, maneuverability. Eliminates loading and trailer expense . . . saves extra man hours.

Help in compaction . . . big tires roll out voids, don't break or crumble material . . . need less haul road maintenance.

Tournatractor—Trademark T-354-G-a

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

DOZING

With addition of A-frame, 2½-yd. bulldozer blade and controls, Tournatractor excavates, grades, handles all dozing jobs.

PUSHING SCRAPER

With bumper and pusher plate, Tournatractor usually keeps 4 scrapers going steady where a crawler would handle only 3.

WINCHING

67,000-lb. winch provides a fast, mobile trouble-shooter for lumbering and clearing, pulling mired trucks, heavy equipment.

PLOWING SNOW

V-type plow mounts on same A-frame as dozer . . . clears 12'4" width, 6½' height, 9' Snow Wing also available.

CLEARING TREES

Pusher reaches 23 ft. high on tree. As load increases, so does traction. Tree falls quickly, usually after single push.

LIFTING

Side-boom hoists 14 tons to maximum 12' height . . . 5 tons at maximum 12' reach. Has power up and down, carries full load anywhere.